

Towards Competence-Based Technical-Vocational Education and Training in Ethiopia

Getachew Habtamu Solomon

Thesis committee

Promotor

Prof. Dr M. Mulder

Professor of Education and Competence Studies

Wageningen University

Co-promotors

Dr R. Wesselink

Assistant professor, Education and Competence Studies Group

Wageningen University

Dr O. Noroozi

Assistant professor, Education and Competence Studies Group

Wageningen University

Other members

Prof. Dr C. Leeuwis, Wageningen University

Prof. Dr M. Gessler, University of Bremen, Germany

Prof. Dr J. M. Voogt, University of Amsterdam, the Netherlands

Prof. Dr J. Winterton, Curtin Business School, Sarawak, Malaysia

This research was conducted under the auspices of the Graduate School of WASS
(Wageningen School of Social Sciences)

Towards Competence-Based Technical-Vocational Education and Training in Ethiopia

Getachew Habtamu Solomon

Thesis

submitted in fulfilment of the requirements for the degree of doctor

at Wageningen University

by the authority of the Rector Magnificus

Prof. Dr A.P.J. Mol

in the presence of the

Thesis Committee appointed by the Academic Board

to be defended in public

on Tuesday 18 October, 2016

at 4 p.m. in the Aula.

Getachew Habtamu Solomon

Towards Competence-Based Technical-Vocational Education and Training (TVET)
In Ethiopia

PhD thesis, Wageningen University, Wageningen, NL (2016)

With summaries in English

ISBN: 978-94-6257-900-2

DOI: <http://dx.doi.org/10.18174/388252>

Dedication

To all those who have supported me in all my life endeavors and who have stood by me in times of difficulty.

Acknowledgements

While working on this PhD project I experienced both difficult and joyful moments. However, I was not alone at these times and in my efforts to finalize this PhD work as various individuals and institutions contributed to its successful completion in varying ways. This PhD work would have never been finalized had it not been for their full support, encouragement and cooperation. Let my sincere gratitude and thanks reach them for their invaluable support.

This PhD project was financed by the Netherlands Organization for International Cooperation in Higher Education (NUFFIC). I would like to thank NUFFIC for granting me the PhD fellowship, without which none of this would have been possible. In the same spirit, I am also grateful to my employer, Addis Ababa University (AAU), for allowing me to pursue this study, for extending my study leave due to the health problem I encountered, and for the financial, material, professional and moral support that has enabled me to finalize the thesis.

I would also like to express my deepest thanks and appreciation to my promoter, Prof. Martin Mulder. Martin, from the first day of my arrival in Wageningen until now, you treated me with more respect and dignity than anyone else I have known in my life. Your visit to my dormitory in Haarweg a few days after my arrival in Wageningen, our visit to Amsterdam with Iranian colleagues and to an Ethiopian restaurant, your invitation to attend a concert at The Concertgebouw and our trip to the North Sea are memorable events which I will always cherish and remember. Your inviting me and my wife to your home and beautiful hometown, and our boating through the canals and on the lakes of Giethoorn in that deadly cold with such excitement, are among the unforgettable moments in my life. You giving your precious time to make us feel at home is a sign of the high respect you have for people, irrespective of who they are and where they come from. Your critical yet constructive comments on my work have been rich sources of learning and moral support for me. Apart from your constructive and guiding comments, I have learned a lot from your strong dedication to your work, your ability to handle many activities with the efficient organization of your time, and your patience and ability to deal with many persons with different backgrounds. It is a great honor for me to work with you.

My special thanks also go to my co-promoters: Dr. Renate Wesselink and Dr. Omid Noroozi. Renate, let me honestly say that without your invaluable comments, empathy and encouragement, I would have never reached this stage of accomplishment. Your patience in

reading my imperfect chapters, and your ability to listen and provide polite responses are some of your most admirable qualities which I have to emulate in my teaching career. Thank you very much, Renate. Omid, your invaluable comments and constructive suggestions helped me to improve the scientific quality of this work. I will always remember the personal advice you provided me with as a colleague while we were together in Wageningen as to how I should proceed in my studies. Thank you for your patience and for taking your precious time to read and correct this thesis.

I am also grateful to all the administrative staff working in and for ECS in their different departments for their roles in administering my PhD project and for the support and respect they gave me whenever I visited their offices. In particular, Marja Boerrigter, Marissa van den Berg, Jolanda Hendriks-Ruisbroek and Nicolette Tauecchio of ECS, I honestly say to you that you have been wonderful people to work with. Special thanks to Marja and Marissa for making my life smooth and easy from the first day I arrived in Wageningen. Kasule George Wilson, you have been a good friend ever since we met in the Netherlands and I will always remember the memorable experiences we shared. Jack Postema and your kind and respectful wife Veronica, together with your adorable children Bernard, Gertjan and Heleen, please know that I always remember your friendship for making me feel at home. Let my respect and thanks also reach Vitaley Popov, Misbah Zeinun, Saeid Karimi, Ester Alake-Tuenter and Eghe Osagie for their professional advice, support and encouragement. To all my Ethiopian friends in the Netherlands and elsewhere, I will always cherish your friendship and support and the memorable times we spent together.

I wish to express my love and special thanks to my wife Tigist Mekonnen and my children Bezawit and Dagmawi Getachew. Your patience, love and endurance of the hardships you experienced during my absence have been the sources of my inspiration in this PhD journey. I am truly and eternally grateful to you and will always love you.

Getachew Habtamu Solomon

Wageningen, July 2016

Table of Contents

	Pages
Chapters	
1. General Introduction	9
2. Technical-Vocational Education and Training (TVET) in Ethiopia: Background and Challenges	24
3. TVET Teachers Participation in TVET Strategy and Curriculum Development and Implementation: Teachers' Perspective	47
4. Realization of Competence-based Education and Training: Teachers', Students' and Graduates' Perspective	67
5. TVET Teacher Education and TVET Teachers Engagement in Professional Development	93
6. General Conclusion and Discussion	117
References	139
Summary (English)	155

Chapter 1

General Introduction

Abstract

In the human development effort, different countries are underscoring the role of TVET in providing relevant knowledge and skills to improve productivity, increase access to employment opportunities and raise the standard of living. It is in recognition of this that, in all Ethiopian educational development endeavors, TVET has been considered to play a key role to tackle the country's socio-economic underdevelopment through knowledgeable and skillful manpower. Since its introduction in 1941, TVET has been guided by different policies and strategies adopted by successive governments who came to power at different times. This thesis investigates how TVET has reached the current stage of its development in Ethiopia and the challenges encountered in implementing a competence-based system aimed at improving present and future TVET practices. This introduction opens with the general state of affairs in Ethiopia as a basis for considering TVET to be a pivotal component of its socio-economic development. Describing the context in which the different studies in this thesis were conducted, this introduction closes with an introduction of the research questions that guided the different studies presented as separate chapters.

1.1 Introduction

Ethiopia is located in the center of the Horn of Africa within 15 degrees north of the equator and shares borders with Sudan and South Sudan to the west, Eritrea to the north and north-east, Djibouti and Somaliland to the east, and Somalia and Kenya to the south. It covers an area of over 1.2 million square kilometers, of which about two thirds is estimated to be potentially suitable for agricultural production (Ministry of Education [MOE], 2010). According to the Central Statistics Agency (2011), Ethiopia has a population of 88 million with an annual growth rate of 2.6% and is therefore the second most populous country in Africa. It is home to 80 ethnic groups with diverse languages and cultures.

The Ethiopian economy is predominantly agrarian; agriculture is the major driver of the economy and sustains about 85% of the country's rural population. About 65 million people live in the temperate highland part of the country and are farmers, while about 12 million live in the lowlands (being a mainly pastoral population); the lowlands cover around 60% of the country. The agricultural sector contributes about 50% to the total GDP, generates about 90% of the export earnings and supplies about 70% of the country's raw material requirements for agro-based large and medium-sized industries (MOE, 2010). The share of the industrial sector is only about 14% (National Planning Commission, 2015). Ethiopia has a reasonably good resource potential for the development of agriculture, biodiversity, water resources, minerals, and so on (Ministry of Finance and Economic Development [MOFED], 2002). Nevertheless, Ethiopia is still one of the poorest countries in the world with many people living below the poverty line (MOE, 2010). In addition, about 35 million people in the Ethiopian work force have low skill levels and educational attainment (MOE, 2008).

With the aim of accelerating development through skilled manpower, education has been given high priority in Ethiopia because access to high-quality education and training is one of the footholds upon which long-term development rests (MOE, 2005). Ozturk (2001) stated that "no country can achieve sustainable economic development without substantial investment in human capital" (p.2). Byrd (2013) asserted that "human capital, expressed in terms of the level of knowledge, skills, and capacity of the human resources has been considered as a crucial factor for nations' economic growth and development" (p.103). Thus, equipping citizens with relevant knowledge and skills to develop their competence to actively engage in economic activities for a better standard of living is critical for the development of any nation, regardless of context. This is especially critical for developing countries such as

Ethiopia, which are falling behind in human resource development expressed in terms of Human Development Index (HDI). Although Ethiopia has improved its performance in the area of human development since 2000, the country performs poorly on human resource development when compared to other countries in the world (United Nations Development Program [UNDP], 2015). For example, Ethiopia's human development index value for 2014 was 0.442, which is below the countries in the low human development category (0.505), placing the country 174th out of the 187 countries surveyed. The country's rating on human development was below the average for countries in sub-Saharan Africa (UNDP, 2015).

Cognizant of the role education and training plays in producing a competent workforce, successive governments have invested much in expanding education and training at every level in the last 70 years (see Kiros, 1996; Negash, 2006; Wagaw, 1979; Lekka, 2006). The introduction of a modern, Western type of education in the 1900s, of Technical-Vocational Education and Training (TVET) in the 1940s, and the opening of University College in 1951 were important milestones in the development of education in the country. The launching of the Comprehensive Secondary Education program in the 1960s to equip secondary school students with employable skills and subsequent educational reforms undertaken in the 1980s and 1990s also transformed the Ethiopian education system, enabling it to play a decisive role in the current stage of national development. The introduction of new educational innovations and the expansion of TVET following the new Education and Training Policy of 1994 at every level (primary, secondary, TVET, higher education) are also evidence that education and training are considered a critical factor in building a competent workforce and in transforming Ethiopian society.

In the human development effort, different countries are underscoring the role of TVET in providing the relevant knowledge and skills required to improve productivity and access to employment opportunities and to raise standards of living (Afeti, 2006; Neyerere, 2009; Tubsree & Bunsong, 2013; UNESCO, 2002). TVET encompasses a variety of learning experiences relevant to the world of work, takes place in various learning contexts, and is offered in educational institutions and the workplace (AU, 2007; UNESCO, 2006). TVET programs provide participants with skills, knowledge and attitudes that enable them to engage in productive work, adapt to rapidly changing labor markets and economies, and participate as responsible citizens in their society (Adams, Middleton, & Ziderman, 1992; Usman & Pascal, 2009). According to Afeti (2006), skill development is vital to increase productivity, stimulate competitiveness, and bring about economic development. TVET contributes to skill

development by enhancing the individual's knowledge of science and technology in a broad occupational area that requires technical and professional competencies that include problem solving, initiative, teamwork and specific occupational skills (Cheetham & Chivers, 1996; Epstein & Hundert, 2002; UNESCO, 2002). It is in recognition of the foregoing that, in all Ethiopian educational development endeavours, TVET has been considered to play a key role in tackling the country's socio-economic underdevelopment through knowledgeable and skillful manpower (Abebe, 2010; MOE, 2008).

In the 1940s, TVET was recognized at the governmental level as a way of reconstructing the war-torn Ethiopian economy following the Italian invasion. This led to the establishment of several TVET schools to produce skilled manpower for the new emerging commercial, industrial and agricultural sectors, contributing to the capacity-building endeavor of the country (Abdulahi, 1972; Wagaw, 1979; Abebe, 2010). Following the new Education and Training Policy of 1994, TVET in Ethiopia was not only tremendously expanded and diversified, but efforts were also made to make it relevant to the national development needs of the country (Abebe, 2010; MOE, 2005). As interventions for skill development, attempts were made to make the TVET system more responsive to labor market needs based on the International Labour Organization (ILO)'s Module of Employable Skills. However, prior to 2008, the TVET system was experiencing the following systemic problems (MOE, 2005; 2008):

- TVET was fragmented, lacked coordination between the different delivery systems and was structurally disconnected;
- TVET concentrated on institution-based training, which favors theoretical instruction, is input oriented and follows curricular requirements, instead of workplace and labor market requirements (training programs lacked relevance to the workplace);
- TVET programs did not address actual competence needs in the economy, with most programs of low quality and theory-driven due to resource constraints and lack of skilled TVET teachers;
- formal and informal non-public and private company-based trainings were not yet part of the overall training system and the skills, knowledge and experience of many persons were not sufficiently acknowledged, developed and utilized;

- no formally recognized TVET certification was available for learning outcomes achieved through non-formal and informal modes of training or learning;
- TVET lacked effectiveness and efficiency so that many TVET graduates remained unemployed, even in occupational fields that showed a high demand for skilled manpower;
- existing TVET teachers/instructors were (mostly) inappropriately practically skilled, i.e. not competent to provide TVET in accordance with the occupational standards.

In 2005, in order to address these problems in the TVET system, a framework was laid down to reorganize the TVET system towards a coherent system that allows access to certification at all levels through required standard assessments (MOE, 2005). Based on this framework, a new TVET strategy was developed in 2008, which made an outcome-based education and training the formal approach to TVET in Ethiopia (MOE, 2008):

The national TVET system, in line with many modern TVET systems worldwide, will be re-organized into an outcome-based system. This means that identified competences needed in the labor market will become the final benchmark of teaching, training and learning, and that all institutions, rules and regulations of the TVET system will be (re-)defined so that they support citizens to become competent (MOE, 2008, p. 21).

TVET in Ethiopia has therefore been reorganized into an outcome-based system with the main emphasis on competence development, which is also the point of departure of competence-based education. Looking into the literature on outcome-based and competence-based education, the two approaches have much in common with regard to guiding principles, curriculum development process, instruction and assessment. For example, outcome-based education is primarily concerned with “what learners actually learn and how well they learn it, what the learners should know, understand, demonstrate (do) and become” (Botha, 2002, p. 364). Smith (2010) describes competence-based education and training (CBET) as a program that focuses on “what a person can do (the outcome) as a result of training in which the outcome is measured against specified standards, not against other students” (p.55). Regarding curriculum development, the starting point for competence-based education is what is required in professional practice – professionally relevant outcomes (Gulikers et al., 2013; Kouwenhoven, 2003; Wesselink, 2010). The same is the case in developing outcome-based curriculums (see Harden, Crosby & Davis, 2000; Killen, 2007). Thus, curriculum decisions are driven by the outcomes the students should display by the end of their learning experiences. Kim (2012) pointed out that “the key principle in outcome-based education is the development of educational programs and application of learning processes with the

beginning in *identifying outcomes*, that is, *competencies* expected as the results of an educational process” (p.917). Both are concerned with learners’ demonstrated capability (competence) realized in results (outcomes). In competence-based education (CBE) assessment, student progress is measured on the basis of *demonstrated performance* (Barmar & Konwar, 2011; Gulikers et al., 2009). The same is true for outcome-based education in which “learner’s progress is based on demonstrated achievement” (Van der Horst & McDonald, 1997). Outcome-based education encourages students to take more responsibility for their own learning (Akhmadeeva, Hindy & Sparrey, 2013; Davis, 2003; Harden, Crosby & Davis, 1999), as does competence-based education (see Wesselink, 2010). The same idea is expressed in the 2008 TVET strategy in Ethiopia that declared outcome-based education in which “competence development is the cornerstone of the Ethiopian TVET system” (MOE, 2008, p. 20). More specifically, “identified competences needed in the labor market will become the final benchmark of teaching, training and learning” (MOE, 2008, p.21). Thus, in this study, competence-based and outcome-based education are considered similar and used interchangeably.

CBET is an outcome-driven program that measures the outcome against specified standards related to industry/professions (Kafyulilo, Rugambuka & Moses, 2012; Schilling et al., 2010; Smith, 1999). CBET aims to make students competent through the acquisition of competencies and the further development of these competencies (Kouwenhoven, 2009). In CBET, the teaching-learning processes and accompanying arrangements focus on competence development in which the competencies that should be acquired and developed by the end of the educational program are the criteria for the development of the curriculum (Kouwenhoven, 2009; Wesselink, 2010). As CBET aims to develop professional competence and the capacity to perform a job in a certain situation, it links school learning with the world of work. Thus, competence, as used in competence-based education, deals with the fulfilment of the requirements of the world of work. Broadly speaking, competence comprises the “totality of knowledge, skills, attributes, behaviors and attitudes (or competencies), as well as, the ability to orchestrate these competencies into the full range of activities necessary for professional practice” (American Academy of Physician Assistants, 2010, p.1). Thus, knowledge, skills and attitudes (competencies) are contents of competence and the use (application) of these competencies in professional practice leads to competent performance of a task – an outcome. As used in CBET, competence, therefore, is understood as the “capability to realize up to standard key occupational tasks that characterize a profession”

(Kouwenhoven, 2003, p.3). In the context of TVET in Ethiopia, competence is conceptualized in the same way:

Competence is the sum of interrelated abilities: the possession and application of knowledge, skills and attitude, and the ability to combine these elements at any given time. It encompasses the capacity to perform a certain task in wage labor and self-employment according to defined standards, expressed as outcomes, which correspond to relevant workplace requirements and other vocational needs (MOE, 2010, p. 21).

Thus, TVET has been restructured to provide “relevant and demand-driven education and training that corresponds to the needs of economic and social sectors for employment and self-employment” (MOE, 2008, p.8). The new TVET system envisaged placing quality (*learner’s achieved competence*) and relevance (*reflecting labor market needs*) as its priority, instead of mere expansion (MOE, 2008). As envisioned in TVET strategic documents (MOE, 2005; 2008), the overall objective of TVET in Ethiopia is:

to create a competent, motivated, adaptable and innovative workforce in Ethiopia contributing to poverty reduction and social and economic development through facilitating demand-driven, high quality technical and vocational education and training, relevant to all sectors of the economy, at all levels and to all people (p.12).

Given the above general aim, TVET in Ethiopia is to accomplish the following specific objectives:

- provide relevant and demand-driven education and training that corresponds to the needs of industry and social sectors for employment and self-employment;
- provide education and training for trainees to make them productive and self-sufficient citizens, by developing and adopting flexible curricula to the needs of trainees;
- assure the quality of TVET provision by establishing a Trade Test System (standard-based occupational assessment) throughout the country in all trades;
- develop demand-oriented curricula based on occupational standards for formal and non-formal education and training by involving experts from the world of work;
- study and implement alternative modes of training delivery such as cooperative training, company-based training, etc.;
- avoid rigid trainee selection placement procedures and apply aptitude tests instead;
- enhance the effectiveness of the system by matching training outputs, especially in terms of quality, to what it is intended to produce through comprehensive and continuous teacher training and curricula development (MOE, 2008, p.12).

Although TVET in Ethiopia opted for a competence-based system, this does not necessarily mean that choosing CBET as a focal point of TVET alone is sufficient to realize competence-

based TVET objectives. Putting CBET into practice is challenging as it is a radical educational innovation in vocational education requiring the fulfilment of many conditions (Wesselink, 2010). For example, CBET requires a total transformation of beliefs, practices and understandings of the teaching and learning process and assessments, which is challenging for teachers who used to work within the traditional educational setup (Gulikers, 2009; Kouwenhoven, 2003; Wesselink, 2010). Seezink (2009) stated that CBET impacts the roles and associated tasks of teachers. In the same vein, Kwakman (2003) stated that teachers of CBE do not transmit 'ready-made knowledge' any more, but assist the students to inquire and construct their own knowledge. This implies that TVET teachers should develop adequate knowledge and understanding, not only of the principles that govern the CBET system, but also of what CBET entails in practice before implementation. Teachers also need to be prepared in advance for the effective implementation of CBET. Preparing these teachers for CBE is not an easy task for developing countries like Ethiopia as it requires much time, effort and resources. It also requires the development of a positive mindset towards CBET and the restructuring of the teacher training programs.

Furthermore, implementation of CBET demands cooperation between educational institutions at various levels, which requires much effort (Wesselink, 2010). In this regard, the cooperation of employers with TVET colleges is critical to implement the internship program as a basis for linking school learning with workplace practice from the inception to the implementation stages. As CBET focuses on individual competence development, it requires several training materials and facilities for students to continuously practice individually and in groups. Given the above, the requirement of CBET is quite different from that of the traditional educational processes. These traditional processes, the dominant practices in the Ethiopian education system, focus more on theory and knowledge transfer than on demonstration in practice. Countries like Ethiopia therefore need to build a solid foundation in terms of manpower, material, institutional structure and proper attitude before beginning to implement educational programs like CBET.

Thus, the main aim of this thesis is to investigate how TVET in Ethiopia has reached the current stage of its competence-based development as well as the challenges encountered in the various stages of its development. We can therefore learn from past achievements and pitfalls to inform present and future TVET practices. Within this broad aim, more specific aims are formulated: 1) to describe how TVET has been introduced and implemented in the last 70 years and the status of CBET implementation in the Ethiopian TVET system in light of

the principles of CBET, 2) to describe its linkage with the graduates' performance in the labor market, and 3) to describe the conditions necessary for CBET realization.

1.2 Context of the study

The TVET sector in Ethiopia is one of the main routes for many professionals to the world of work and knows a high enrolment every year. For example, enrolment in TVET was 320,225 in 2012, which is more or less equal to enrolment in college preparatory education, which was 323,785 for the same year. The average annual growth rate of TVET enrolment between 2008 and 2012 was 30% (MOE, 2012). Currently, TVET in Ethiopia offers training at five levels. Level I and II trainings are basic skills trainings in which individuals who are not able to complete general education (grade 10) join the training programs. Levels III, IV and V, which together are also called middle-level training, are TVET qualifications just below a bachelor's degree in which students who have completed general education enroll.

The level-based training is structured so that one level is terminal and at the same time a step to the next level. Middle-level TVET was chosen for this study because students at this level have more school experience than level I and II students and because middle-level TVET students stay longer in the training programs. Level I and II training programs are also part of the middle-level training. As students of level III, IV and V programs also pass through level I and II programs they are able to provide information on the conditions of implementation in all levels of training. TVET students in middle-level TVET are relatively more mature in terms of experience and their understanding of TVET programs and the research instruments than students in levels I and II.

As shown in Figure 1, the Ethiopian education system involves eight years of primary education and two years of general education (grades 9 and 10). After completing grade 10, students are streamed either to college preparatory schools or to TVET, based on their achievement in the grade 10 national examination. Those students who successfully pass the national examination join a preparatory program (grades 11-12), a program which prepares students for university education. Those who complete grade 10 but are unable to join the preparatory programs because of a low EGSECE score are placed in middle-level training at different levels (see Chapter 2 for the details).

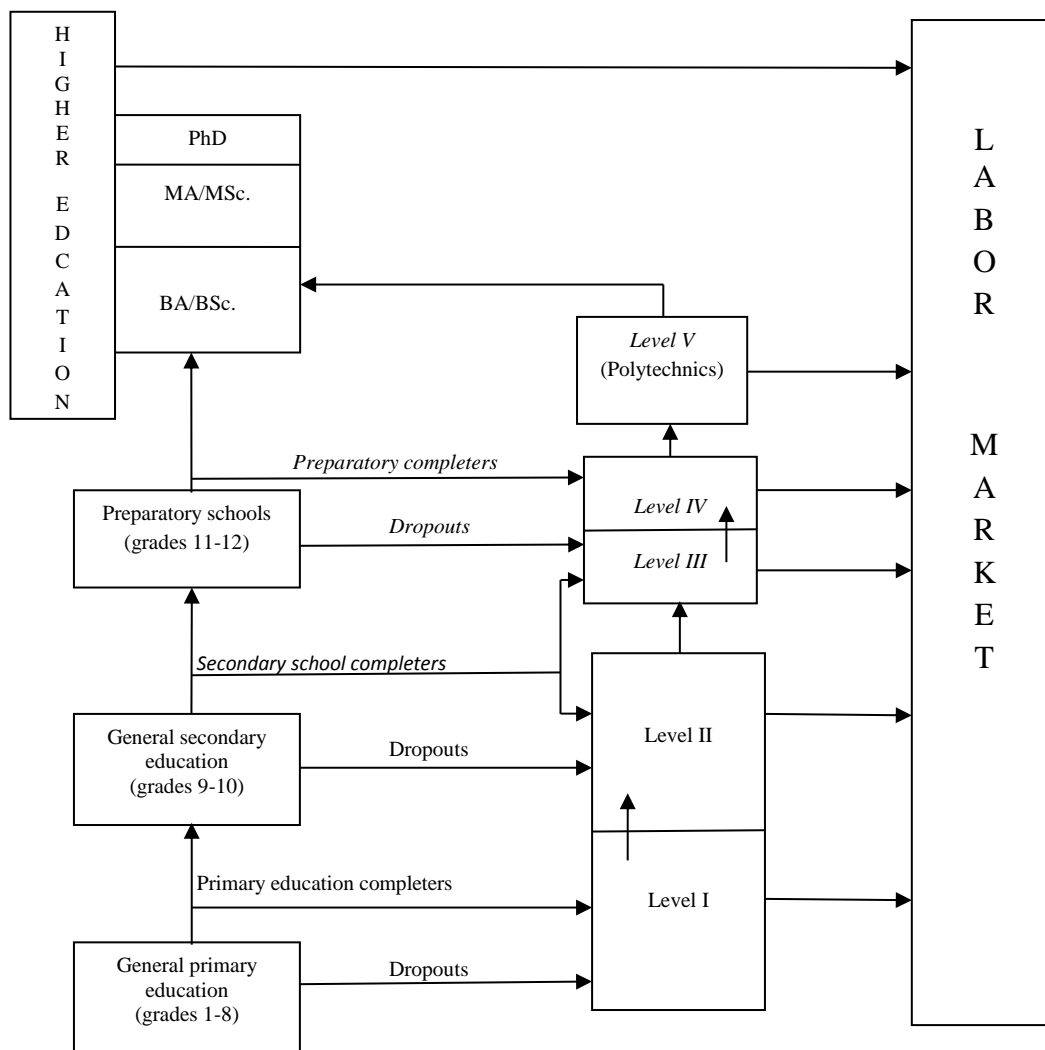


Figure 1. Ethiopian education structure showing academic and TVET pathways (adapted from MOE education statistical abstract 2011/2012).

TVET is offered at four types of TVET centers: TVET Institutions (provide only level I and II training), TVET Colleges (provide only level I-III training) and Polytechnic TVET colleges (provide training in all levels (I-V)). Chapters 3, 4 and part of Chapter 5 (teachers' professional development) were conducted in Polytechnic TVET colleges in Addis Ababa. Addis Ababa was chosen because it is the most developed industrial area in the country with a developed infrastructure, a large number of enterprises, high employment opportunities and a high potential to provide TVET students with an opportunity for industrial practice. Thus, the Addis Ababa administrative region provides a better learning opportunity for TVET students in terms of learning facilities, experienced teachers and exposure to various learning media which TVET students can exploit to further supplement their formal training. Polytechnic colleges were chosen for this study because these colleges provide training at all levels, are

relatively well equipped in terms of training facilities and have experienced teachers with all qualification levels (see Chapter 2). The thesis also includes a study on TVET teacher education and professional development as critical factors for TVET success (see Chapter 5). Two TVET teacher training colleges offering bachelor's degree programs to upgrade C-level TVET teachers to a bachelor's degree level were included in the study on TVET teacher education. Currently, TVET teachers are categorized into three levels: C-level teachers (TVET graduates with diploma recruited to teach at levels I-II), B-Level teachers (bachelor's degree holders teaching at levels I-IV) and A-Level teachers (master's degree holders teaching in all levels). In this thesis, only A-level and B-level TVET teachers were involved, except for the study on TVET teacher preparation (see Chapter 5).

1.3 Problem statement, research questions and thesis overview

As stated before, TVET in Ethiopia has been considered pivotal for the country's overall development and for improving quality of life through skill development. Since 1941, TVET in Ethiopia has passed through various stages of development, guided by different policies that have reflected the ideologies of successive governments. The central theme of this thesis is to examine how TVET has reached the current stage of development and the challenges it has encountered along the way by looking into its achievements and pitfalls as a learning ground to improve current and future practices of implementing a competence-based TVET system. Within this theme, the first aim of this thesis is to provide a historical overview of TVET development in Ethiopia and the challenges to implementing competence-based TVET. This is addressed by two interrelated research questions that are dealt with in Chapter 2. The research questions are: a) *How has the TVET system developed in Ethiopia and what lessons can be learned as a basis for current and future practice?* and b) *What challenges are currently being encountered in implementing competence-based TVET in Ethiopia?* In this study, a qualitative research method is applied using documents, literature studies and interviews.

In any educational reform, teachers play a vital role at various levels (Campos, 2005; Carl, 2009; Handler, 2010). In fact, Gulikers (2013) and Wesselink (2010) pointed out that the actual implementation of an educational innovation such as competence-based education hinges on the teachers. The Organization for Economic Cooperation and Development (OECD) (2011) stressed that a teacher's active involvement in policy development and implementation builds a sense of "ownership" of reform, which increases the likelihood of

success in implementing reform. As research on the experience of the Ethiopian educational reform process indicated (see Negash, 2006; Tefera, 1994), teachers were marginalized in educational reform discourses, which was considered one of the factors contributing to the educational reform failures. Not only is teachers' involvement in policy discourse and curriculum development important, but also the conditions under which teachers can teach as well as the availability of teaching-learning resources (teaching materials, facilities, etc.). Furthermore, students' characteristics influence teachers' motivation and practices in realizing reforms. In view of this, the second aim of this thesis is to examine the extent to which TVET teachers have participated in TVET policy and curriculum matters and their perceptions of the TVET system in light of their participation and the constraints they encountered in implementation. Three research questions are answered for this purpose in Chapter 3: a) *To what extent did TVET teachers participate in the development of a competence-based TVET strategy, curriculum development and implementation process/discourse?*, b) *What problems have teachers encountered in implementing a competence-based approach in TVET colleges?*, and c) *How do teachers perceive the TVET system in relation to their participation and the problems they encounter in implementation?* In this study, a quantitative research method is applied using a questionnaire.

As stated before, TVET in Ethiopia began implementing CBET in 2008. Nevertheless, the realization of competence-based TVET's main goal for competent manpower relies heavily on conducting the training programs in powerful learning environments, enabling teachers and students to integrate theory and practice and, at the same time, making learning meaningful and authentic. This is possible if competence-based TVET is practiced in accordance with the principles of CBET that guide curriculum development, teaching-learning processes and assessment. These principles collectively characterize CBET and comprise: formulating competence profiles based on occupational analysis, professional core tasks (problems) as a basis for curriculum development, the regular assessment of students in the learning process, the integration of knowledge, skills and attitudes, the use of meaningful (authentic) learning activities, student reflection and self-steering, flexibility in delivery and time, and proper teacher guidance and feedback (see Chapter 4 and Sturing et al., 2011). The realization level of these principles reflects the 'competentiveness' of the TVET programs, in other words the degree to which the TVET program is competence-based (Sturing et al., 2011). Thus, how competence-based TVET looks in practice needs to be investigated in light of CBET principles as a basis for enhancing TVET quality. Although competence-based

training is believed to make its graduates perform better in the labor market (Biemans et al., 2004), whether a relationship exists between the ‘competentiveness’ of a vocational program and graduates’ performance in the labor market is not yet established through practice. With this understanding, the following two questions are answered in Chapter 4: a) *To what extent are the principles of competence-based education and training implemented in TVET programs in Ethiopia?* and b) *To what extent does competence-based education and training facilitate the performance of graduates in employment?* The purpose of this chapter is two-fold: to examine the extent to which TVET programs are competence-based as reflected by TVET teachers and students by identifying the realization level of competence-based TVET, and to examine whether a relationship exists between competence-based training and graduates’ job performance. A quantitative research method was used to answer the research questions.

Synthesizing research findings, Hightower et al. (2011) pointed out that teacher quality is considered the most important school-based factor in student achievement with a long-lasting effect on student learning. Thus, training teachers is a key component to improve the quality and status of TVET (Maclean, 2006). In competence-based education and training, teachers also play a coaching role by creating learning opportunities and guiding learners in their learning and development process (Hoogveld, Paas & Jochems, 2005; Struyven & Meyst, 2010; Wesselink, 2010). In most cases, moving to these new roles and associated tasks is not easy for teachers used to working in the knowledge transmission tradition (Seezink, 2009). Teachers therefore need to be well prepared in teacher training programs for their changing roles and the new demands in the profession (Korthagen & Kessels, 1999; Seezenk, 2009). Wesselink (2010) stressed that teachers will have to be properly trained to build their competencies in both curriculum content and instruction for the success of competence-based education. Initial teacher education also plays a role in this regard.

However, initial teacher education alone is not sufficient to make teachers effective in schools (Runhaar, 2009). Teachers need to engage in professional development activities while teaching, to update their knowledge and skills and to improve their practice and student learning (Bayar, 2013; Gendole, 2013; Guskey, 2002; Kwakman, 2003; Runhaar, 2009). As knowledge is changing fast, teachers should know the latest developments in their area of expertise and professional practice and reflect on their own practice (Wesselink, 2010). As TVET in Ethiopia follows a competence-based approach, initial (pre-service) TVET teacher training programs are expected to be competence-based, reflecting the TVET curriculum and

its modality. TVET teachers are also expected to be engaged in both personally and administratively initiated professional learning activities. This study therefore explores initial (pre-service) TVET teacher training practices in the light of competence-based principles and TVET teachers' engagement in professional development activities. Two research questions are answered in Chapter 5: a) *To what extent are TVET teachers prepared by means of pre-service teacher training for competence-based TVET?* and b) *What professional development activities do TVET teachers undertake to improve their knowledge and practice for implementing competence-based TVET?* A mixed research method was followed to answer the research questions.

Finally, the main findings are described and discussed in the last chapter of this thesis. The chapter begins with a summary of the findings, followed by a general discussion of the four studies and their theoretical and practical implications. At the end, the limitations of this PhD research project, implications for future research, and recommendations for policy and practice are presented.

Chapter 2

Technical-Vocational Education and Training (TVET) in Ethiopia: Background and Challenges

Abstract

Technical-vocational education and training plays a great role in providing the skilled manpower required by the various economic sectors in Ethiopia. This does not, however, mean that the development of TVET in Ethiopia has been smooth and without challenges. This chapter explores the background and challenges of TVET in its various stages of development in Ethiopia, including the current challenges in practicing competence-based TVET. Using interview-based discussion and a questionnaire, data were collected from TVET administrators, coordinators, teachers and students. Results revealed that TVET has been shaped by different political ideologies and has lacked consistent policy direction, so that development stages have not built upon each other since its introduction in the 1940s. In all its development stages, TVET has lacked alignment with employment capacity. The challenges of current competence-based TVET relate to strategy and curriculum development, making implementation planning difficult in technical-vocational colleges. Furthermore, TVET teachers are not trained to provide competence-based education and lack the psychological preparedness to shoulder the responsibilities that competence-based TVET entails. TVET also lacks strong school-industry partnerships, which makes the implementation of cooperative training difficult. In addition, TVET is assigned with multiple responsibilities such as providing training for micro and small-scale enterprises parallel to its formal training. Finally, competence-based TVET lacks a solid implementation foundation; TVET graduates are still not competent to the level required, as reflected in the national occupational assessment results. Concrete national interventions are necessary to ensure TVET's quality and sustainability.

2.1 Introduction

Socio-economic development requires a competent labor force that is capable of performing job tasks but that can also readily adjust to the changing organizational and work environment. To obtain such skilled manpower, governments invest in human resource development programs and engage in expanding education and training, which contributes to realizing the country's developmental goals. Gylfason (2001) noted that education activates economic growth and improves people's lives by increasing the efficiency of the labor force. As human resource development is the wherewithal of the development of nations, improving the capacity and productivity of society through education and training has been given priority in development agendas.

As an educational and training program that enhances productivity through skill formation, TVET is considered crucial for the socio-economic development of nations (African Union [AU], 2007; Anane, 2013; Dasmani, 2011; Shah et al., 2011). TVET plays this role by transmitting the values, skills, knowledge and attitudes that are necessary to perform certain skills in a modern sector of the economy (Sharma & Naisele, 2008). This unlocks and expands people's potential as well as their ability to adapt to changes in the dynamic world (Anane, 2013). Atchoarena and Delluc (2001) considered TVET as "a passport to employment and the possibility of social advancement" (p.16). Because of TVET's close link to the world of work, TVET contributes most to the training of skilled labor and to providing people with the knowledge required to ply a trade (Atchoarena & Delluc, 2001).

TVET has a vital role to play in poverty reduction, especially in less-developed countries which are characterized by a lack of proper education and skills training, a high illiteracy rate, rampant unemployment, a poor standard of living and poor earning capacity. For example, most African countries are characterized as "weak national economies, high population growth, and a growing labor force; shrinking or stagnant wage employment opportunities especially in the industrial sector; huge numbers of poorly educated, unskilled and unemployed youth" (AU, 2007, p.6). These countries work to tackle impediments to socio-economic development by expanding education and skills training. Examining the developmental strategies of African countries and the huge resources committed to skill development, one sees that TVET has been considered to play a great role in poverty reduction and in empowering people for a better life (AU, 2007). Because of TVET's role in socio-economic development through producing a competent labor force, TVET has become a

core component of the national agenda of the educational system in many countries (UNESCO, 2002) as a fundamental element in the development equation (Anane, 2013).

Like other developing countries, Ethiopia has implemented TVET to enhance its socio-economic development and to reduce poverty. Following the changes in the political governance of successive governments, the TVET system in Ethiopia has been reorganized throughout the decades to reflect the governing political ideologies. Despite the ideological differences, all capitalized on expanding TVET as a source of skilled manpower for the existing and emerging economic sectors. TVET in Ethiopia has been in place since the early 1940s and guided by various educational and training approaches. However, a comprehensive study on how TVET in Ethiopia has been practiced in the last 70 years to serve as a basis for developing a consensus-based national TVET system has not been undertaken. Such a comprehensive study needs to be conducted to examine TVET development in the light of the integration of the various TVET developmental stages to determine the extent to which one stage has been built over the other. Analyzing the achievements and pitfalls of each stage will serve as a learning ground to inform TVET policy formulation and practices, and filling this gap is one of the main concerns of this study.

This study, therefore, highlights the linkage between the challenges of the current TVET system and TVET practices in the past, contributing towards policy formulation and implementation. The following two research questions were formulated to guide the study:

1. How has the TVET system developed in Ethiopia since 1940 and what lessons can be learned from that development as a basis for current and future practice?
2. What challenges are currently being encountered or are expected to be encountered in the future in implementing competence-based TVET in Ethiopia?

2.2 Method

2.2.1 Design of the study

In this study, a qualitative approach was applied to obtain an understanding of the history of Ethiopia's TVET system. Within this approach, recorded data on the development of TVET in Ethiopia were captured from educational policy documents and research findings and from interview-based discussions with educational researchers and TVET administrators. Documents and research findings were mainly used to answer the *first research question* by

compiling information on how modern education started in Ethiopia, the conditions under which TVET was introduced and developed, current practice, structure and current status in terms of enrollment, coverage of programs, and so on. The *second research question* was addressed using data from interviews with TVET administrators, coordinators and teachers.

2.2.2 Participants

Four government polytechnic TVET colleges in Addis Ababa that provide training at all levels (levels I-V) were included in this study. The participants were educational researchers, TVET administrators, training coordinators and TVET teachers, all with much experience in teaching and administration in different capacities and various TVET curriculum settings. Grade 10 students selected from three secondary schools in Addis Ababa were also involved in this study to capture their perception of TVET and to discover whether they were given background information on technical-vocational education as a career alternative. Parents with children in grade 10 also participated in this study to capture their reflections on whether they perceive TVET as a viable option for their children's future careers.

2.2.3 Instruments

Various documents, such as books on education in Ethiopia, educational policy documents such as TVET policy, TVET proclamations, national studies on Ethiopian education including TVET, education-related statistical reports, and research articles on TVET, were consulted as secondary sources of information.

Semi-structured interviews were conducted with three educational researchers on educational policy formulation, participation processes and implementation issues in the TVET system and the implications for program sustainability. These educational researchers have worked in education, including vocational education, for a long time, have conducted research on technical-vocational education, and have participated in education/TVET conferences, curriculum development and consultative meetings. They have also taught vocational education courses in universities and advised graduate students on vocational education programs.

Interviews were conducted with the deans of TVET colleges and coordinators who have worked in polytechnic colleges in Addis Ababa in various curriculum settings. The interview questions were framed based on the information obtained from various reports on outcome-based TVET performance and personal discussions with deans and coordinators. The

interview questions presented to deans and coordinators related to the current challenges faced by the polytechnic TVET colleges in implementing the competence-based training programs. Examples of interview questions presented to the respondents are: “In light of the many training programs running in the colleges, to what extent are the colleges equipped with the necessary teaching facilities? Is the cooperative training being conducted as per requirements of the TVET strategy? Are TVET teachers adequately prepared to run competence-based TVET?”. The interview sessions took 30 minutes on average. The interviews and discussions were mainly recorded in field notes and were held in Amharic (a local language) and transcribed into English.

Informal interview-based discussions were conducted with 20 parents of grade 10 students at several social meetings such as parents’ day meetings, community service meeting and social events held at various times. The purpose of the interview-based discussions was to capture parents’ attitudes towards TVET based on their reflection on their children’s placement after completing grade 10. For example, questions like “Where do you want your children to enroll after completing grade 10 and why?” were used to initiate the discussions, which took 15 minutes on average. A questionnaire with six items relating to placement, future career choice, teacher and parental guidance designed in a six-point Likert type scale was distributed to 120 grade 10 students of three schools (one private and two public) to obtain awareness and perception-indicative information. The schools were selected randomly from one sub-region in Addis Ababa. The questionnaire was distributed before the end of the second semester by school teachers to both male and female students. About 80% of the students responded to the questionnaire.

2.2.4 Data analysis

Various records such as books, reports and policy documents that record the development of education in Ethiopia were used in this study. Most of the recorded data on the development of TVET were extracted from these records as documents that specifically deal with TVET development are scarce. The education-related documents generated by historians, researchers and organizations that deal with TVET development and issues at different periods were identified and categorized under four historical periods (eras), reflecting the political governance system of the country at different times: the 1940s–1974, 1974–1994, and so on. Thus, the data used to show TVET development are a compilation of the various documents. The interview data collected from the educational researchers, TVET administrators and

TVET teachers were analyzed using narrative analysis in which the responses of the interviewees were narrated as by individual interviews or collectively on similar responses. The responses of grade 10 students were analyzed using percentages, as the main purpose of involving the students was to see their inclination.

2.3 Results

2.3.1 Introduction of technical-vocational education in Ethiopia

Formal technical-vocational education and training emerged in Ethiopia following the expulsion of the Italians in 1941. Before the 1940s, there were no formalized technical training institutions beyond the non-formal ones provided by master artisans and craftsmen where instruction was through “observation and participation” (Abudulahi et al., 1972, p.29). Even though suggestions were brought forward that practical skills especially for “labor with the hands” be included in the schools’ curriculums in the early 1930s, none were taken as productive and the schools remained academic (Ayalew, 2000). As of 1942, the government embarked on a reconstruction of the country’s economy, which had been destroyed by the Italian invasion, requiring skilled manpower for the existing and emerging economic sectors. The 1940s were a “period of restoration” in which a solid foundation for the development of education was laid down, guided by policies to promote education in the country (Kiros, 1990; Lekka, 2006). As a result, many schools, including vocational schools, were established with the support of Britain, the USA, the Soviet Union and other countries.

The following sections present the development of TVET in time, based on educational policy changes (including TVET) which resulted from changes in political governance. Since the introduction of TVET (in the 1940s), Ethiopia has experienced three systems of political governance, each distinguished by its own education policy: the Imperial system (1940–1974), the military/socialist system (1974–1991) and the current federal system of governance (1991 to the present). From 1994 onwards, TVET is divided in two periods: from 1994 to 2008, and from 2009 to the present. This is due to the radical policy shift made in TVET after 2008.

2.3.1.1 Technical-Vocational Education between 1940 and 1974 – military/socialist system

As of 1941, TVET was recognized at the government level as an essential instrument for socio-economic development, which led to the establishment of the first technical-vocational school, Addis Ababa Technical School. The technical school provided skills training in motor

vehicle driving, forging, welding, masonry, machine shop practice, electrical theory and practice, and carpentry at various levels (Pankhurst, 1955). Following the economic expansion after the Italians left the country, technical-vocational education continued to expand in the 1940s and 1950s to produce skilled manpower for the emerging economic and social sectors, leading to the establishment of vocational schools in industrial technology, business, agriculture and home science in several regions of the country (Abudulahi et al., 1972; Wagaw, 1979).

The curriculum of the TVET schools of the 1940s and 1950s offered both general and technical courses. The Technical School's curriculum, for example, incorporated three types of courses: general education courses like language (Amharic and English), mathematics, science, civics and physical education; and general technical education courses like mechanical drawing, general workshop, practical mechanics, and so on (Abudulahi et al., 1972, p.30). However, the curriculum of the secondary schools of the 1940s–1950s was devoid of skill courses and most secondary school graduates remained unemployed. In addition, most secondary school students were not able to enter university because of the limited intake capacity of what was then Haile Selassie I University (now Addis Ababa University).

Meanwhile, the 1961 UNESCO-sponsored conference was held in Ethiopia to evaluate the African education system. The main theme of the conference was to improve the quality and relevance of education in Africa, emphasizing linking education with socio-economic development (Kiros, 1990). The conference found that the African education system was producing too many secondary school graduates beyond the absorption capacity of the economy (Negash, 2006). Consequently, work-oriented curriculum diversification was recommended (Abudulahi et al., 1972; Kiros, 1990; Psacharopoulos, 1990). In response, most African governments considered TVET as an integral part of the general school curriculum (Indoshi, Wagan & Agak, 2010).

In 1961 the Ethiopian government initiated educational reforms to make secondary education more relevant to the world of work and to be “functional and useful for the students and society” (Abudulahi et al., 1972, p.6). The purpose was to promote employment opportunities for secondary school graduates. For this purpose, a comprehensive secondary school with vocational and academic streams, adopted from the USA, was introduced in 1961. Training was offered in four areas: industrial arts, home economics, commerce and agriculture. Many

academic secondary schools were changed to comprehensive secondary schools (grades 9–12), some with junior secondary (grades 7–8) (Abudulahi et al., 1972). After Grade 9, students could choose whether to enroll in an academic or vocational stream. Both vocational and academic subjects were offered in the vocational stream.

The objective of comprehensive secondary education was to allow students to gain employable skills in addition to academic knowledge. However, given the weak economic base, its realization was a challenge for the government due to a lack of clear objectives and a shortage of teachers, instructional facilities and competitive examinations (Abudulahi et al., 1972). The expansion of comprehensive secondary schooling continued in almost all governmental secondary schools, with little or no regard for either community needs or program quality (Girma, 1994). Like the secondary schools in the 1940s and 1950s, the curriculum, the teachers and the teaching materials were foreign (Kiros, 1990). By the late 1960s, the graduates of technical-vocational schools, like the secondary-school graduates, were also experiencing unemployment. Many graduates with technical skills who entered the labor market remained unemployed due to the low absorption capacity of the economy (Abudulahi et al., 1972; Lekka, 1996). There were also very limited opportunities for entering university. As Kiros (1990) reported, only 26% of the TVET graduates were eligible to attend university in 1972.

In 1972, the government launched a comprehensive study of the education system, including vocational education, called the Education Sector Review (ESR) to resolve the problem of unemployment among the “educated-unemployed” (Abudulahi et al., 1972; Negash, 2006; Wagaw, 1979). According to Abudulahi et al. (1972, p.32), the main factors contributing to TVET graduate unemployment in that period were:

- inadequate preparation in their chosen field of training – it was felt that the graduates left their training institutions with only theoretical experience;
- a lack of proper attitude and occupational ethics on the part of the graduates, and a lack of orientation to business and industrial requirements;
- a lag in industrial growth, which appeared to result in a failure to absorb the output of these training institutions;
- the static situation of industrial establishments which showed no progress in expansion aimed at opening up employment opportunities for the graduates.

Clearly, the problem was not limited to an excess workforce beyond the absorption capacity of the economy. The competence level of the graduates was also questionable, as a consequence of a poor training system devoid of proper training facilities and industrial practice. Although valuable recommendations were made in the ESR report, these were not made public on time (Negash, 2006; Tefera, 1996). The review was conducted behind closed doors, without public participation; teachers in particular were marginalized from the review process. Teachers and students strongly opposed the ESR; not only they were not involved in the review process, but they were also unhappy with the recommendations (Negash, 2006; Tefera, 1996).

2.3.1.2 Technical-Vocational Education between 1974 and 1994 – the military/socialist system

Following the introduction of socialist-oriented military government in 1974, the education system was restructured in line with the socialist system. The objective of education by then was to “prepare the participants for production and to develop scientific as well as socialist consciousness” (Kiros, 1990, p.82). These objectives were to be attained through “polytechnic education”, which embraced intellectual, ideological, vocational and technical, aesthetic, physical and labor education (Kiros, 1990). Polytechnic education was adopted from the Soviet Union and East Germany and put in place in the mid-1970s.

In the polytechnic system, general polytechnic courses were offered in grades 9 and 10. Students were enrolled either in senior secondary education (grades 11 and 12) or a three-year (10+3) TVET program for those who opted for the vocational programs. Some of the comprehensive secondary schools were changed into polytechnic vocational training centers to prepare individuals for occupations at the paraprofessional level (Girma, 1994). Those students who completed grade 10 with good academic standing (those ranked 1–10) enrolled in these polytechnic vocational schools by choice (Lekka, 1996). The polytechnic vocational schools provided training in industrial technology, construction, commerce, home economics and agriculture. Additionally, the students took general education courses like language and mathematics and courses related to their specialization (MOE-curriculum document, 1990). Curriculum documents from the time show, for example, that students enrolled in industrial technology took physics, chemistry, and so on, and those in the commercial stream took courses like economics, bookkeeping and general business. The trainees were able to continue

university education after completing their training on the basis of their Ethiopian School Leaving Certificate Examination (ESLCE) results, like those in the 60s–70s (Lekka, 1996).

The reform was a radical move against the deep-rooted belief that vocational education is the domain of the “academically poor”, and put vocational education on a par with general education. As Negash (2006) pointed out, the country suffered the same kind of educational crisis in the 1970s and 1980s as in the 1960s. Despite the fundamental reforms, many graduates remained jobless because of economic underdevelopment, though the expansion rate did not change (Negash, 2006). Furthermore, higher education institutions did not expand to accommodate the growing number of secondary school graduates, and enrollment had become highly competitive. Thus, many of these graduates were unable to attend university (Kiros, 1990; Negash, 2006). In 1983, the government launched the Evaluative Research of the General Education System in Ethiopia (ERGESE) to improve the education system. The evaluation reported on the educational crisis the country was experiencing, along with recommendations to curb the crisis. However, as with the previous government, the recommendations were not implemented despite being “relevant and timely” (Tefera, 1996).

2.3.1.3 Technical and Vocational Education and Training since 1994 – current federal system of governance

Following the introduction of the 1994 education and training policy, a diversified technical-vocational training is now recommended for school leavers from any level of education (MOE, 1994). TVET is provided parallel to the general education system and offers training at various levels. Initially, a two-year TVET program was initiated for students who had completed general education (MOE, 1994); this was later changed to a three-year program. A modular-based TVET curriculum was developed following the concept of the Modules for Employable Skills (MES) scheme of the International Labour Organization (ILO).

The training modules were designed as self-contained units containing job profiles, content areas stated in terms of duties and tasks with their respective objectives, learning activities, training methods, training materials, and assessment techniques (MOE-TVET curriculum, 2005). Training modules were prepared for each sub-occupation in each occupational category. An attempt was made to involve practitioners to evaluate the training modules regarding their relevance to occupational practice. Although the modular-based curriculum was an attempt to link the TVET curriculum to labor market needs, the curriculum was not based on a thorough occupational and well-articulated labor market needs analysis. In an

interview, a TVET college administrator who had served as a TVET expert and was engaged in facilitating module development process stated the following:

There was an effort to identify occupational areas in the labor market with potential employment as a basis for module development, but the identification process was not based on a critical labor market need analysis; content development was left to module developers, not by people from the labor market.

Although interventions of various kinds have been made at various times to improve training quality, the training before 2008 focused on coverage and completion instead of the competence needs of the labor market (MOE, 2008). Thus, the National TVET Strategy (NTS) was developed in 2008 to address the competence needs of the labor market, with the objective of creating a “competent, motivated, adaptable, and innovative workforce” (MOE, 2008, p.11). Since then, a “demand-driven” outcome-based TVET system has been introduced, based on occupational standards (OS) that define the “competence of a worker in line with need of the labor market” (MOE, 2010, p.12). The OSs are to serve as a basis for curriculum development, design of the teaching-learning process, and assessment. The development of TVET is also guided by the principles of “demand orientation, quality and relevance, equal access and equal opportunity, career progression and continuation of learning, flexibility, lifelong learning, gender sensitivity, environmental protection, and fight against HIV/AIDS” (MOE, 2008, p.13). Since 2008, the 10+X training modality has been changed to level-based training in which training is provided at five levels. Level 1 and level II training are basic skill trainings. Training in levels III, IV and V are for middle-level manpower training provided for those who have completed general secondary education (grade 10) and enrolled for certificate, diploma and advanced diploma programs respectively. All level-based trainings begin at level I. Those eligible for preparatory schooling, as well as students who have completed grade 12 but could not enter higher education, can also choose to enroll for TVET.

The TVET system assigns individuals to a particular level based on their prior learning, irrespective of how and where they learned or trained. In addition, the national occupational competence assessment mechanism, an external assessment scheme, has been implemented to ensure the quality of TVET (MOE, 2008). Before 2011, TVET graduates underwent a national occupational assessment — also known as Certificate of Competence (COC), with theoretical and practical aspects – upon completion of their training. Currently, trainees are

assessed first at the institution level (a condition for national assessment) and next at the national level at each level of training. A certificate of completion is issued based on the results of the national assessment. The new TVET system also envisages that TVET training in technical-vocational colleges be conducted in collaboration with enterprises through “cooperative training”. The purpose is to expose students to the actual work environment so that they learn from occupational practice in real life situations (MOE, 2008). In the cooperative training scheme, trainees are expected to spend most of their study time in enterprises while they are training, unlike the former apprenticeship system in which trainees worked for 312 hours in companies after completing the learning in TVET colleges as a requirement for completion.

TVET has undergone extensive quantitative expansion since 2005, expressed in terms of enrollment and number of training centers and teachers. This has improved access to TVET in various regions in the country (MOE, 2011; 2012). For example, TVET student enrollment was 106,336 in 2005, while in 2012 it reached 320,225 – a 200% increase. Overall, TVET has experienced an 8.7% average annual growth rate. In 2005 there were 199 TVET schools; this reached 505 in 2012, an increase of 153%. The number of TVET teachers also increased by 160% in the same period (MOE, 2011; 2012, p.54–55). The profile of TVET enrollment, however, differs by region. For example, about 87% of TVET enrollment was in four regional states: Oromia (47.5%), South Nations and Nationalities (17.4%), Amhara (13.6%) and Addis Ababa (9.31%), and the remaining 13% in the other regions. Females accounted for 48% of the total enrollment. Until 2012, a total of 140,461 TVET trainees graduated in all levels of training (MOE, 2012).

To sum up, the following major lessons can be learned from TVET development in Ethiopia. First, although expanding TVET may be appropriate to create access, the expansion should be backed by continuous economic development to ensure the employability of the manpower generated from TVET. Second, TVET by its nature requires huge resources for implementation. Thus, its expansion need to be aligned with the resource potential of the institutions that implement the TVET programs. Third, although an education and training system should reflect new socio-economic developments, it should be crafted in such a manner that it is not subject to fundamental disruption whenever political changes take place. For this, it is important to build a consensus-based national education policy including TVET by involving the public, especially the implementers of educational policy such as teachers. Fourth, when introducing new and innovative educational programs, priority must be given to

building the basic requirements essential for effective implementation, such as appropriately trained teachers with positive attitudes, proper and adequate facilities and administrative structure, in other words a solid implementation foundation should be built first. Fifth, whenever new educational programs are adopted from other countries, for example the comprehensive secondary school package of the early 1960s, the challenges that those countries passed through and the way in which they surmounted those challenges should also be considered for effective adaptation and implementation.

2.4 Challenges of competence-based TVET in Ethiopia

Although the TVET curriculum has been developed to reflect the needs and requirements of the labor market through the competence-based approach, the TVET system is still not without challenges. The major challenges identified through interviews with college administrators and program coordinators are presented below.

2.4.1 Training in many occupational areas leads to resource constraints

In polytechnic TVET colleges, training is offered in many occupational areas – ‘hard skill’ areas such as construction, mechanical engineering and electrical fields, and ‘soft skill’ areas such as business, human resources, office operations, and so on, with different specializations within each occupational area in all levels of training (levels I-IV). Training in multiple occupational areas demands huge resources. In this regard, the TVET teachers and administrators interviewed stated that “there are shortages of training materials in many occupational areas; engaging each student in practical work in the workshops is a critical problem”. One of the interviewed TVET administrators also said that “in some cases, materials are not available in time mainly due to shortage of finance to address the requests of different training programs on time”. Interviewed administrators reflected that the increase in enrollment and the shortage of materials and facilities have resulted in TVET institutions operating under stringent conditions. Interviewed teachers stated that such resource constraints have a direct effect on the competence development of the learners because of insufficient practical learning.

2.4.2 Introducing curriculum changes

The interview responses of teachers and TVET administrators and information from documents showed that there are frequent changes in curriculum and program delivery. According to the interview conducted with administrators, for example, students who had

completed their first-year training in the former curriculum in 2009 were forced to train again in the new curriculum, with no consideration of their time and financial resources. In this regard, one of the interviewed public TVET college administrator stated that “TVET students were ordered to register for new competences even after completing their training; otherwise their graduation would be delayed”. The Private TVET Providers Association (PTPA) has also complained that the curriculum change was so swift that “TVET providers were ordered to introduce the change immediately without considering the status of the incumbent programs and batch of trainees” (PTPA, 2011, p.5). The same document stated that the curriculum change applied not only to new entrants but also to those who had already enrolled in the previous curriculum, and that the curriculum in one area of training “changed twice in a year” (PTPA, p.5). One of the interviewed training coordinators in one of the public TVET colleges said that such occurrences are “usual phenomena in TVET institutions”, expressing the condition as a “state of confusion”.

2.4.3 Teachers for competence-based education and training

Most of the TVET teachers who were to implement competence-based TVET were products of “teacher-centered” approaches with little or no practical experience in the real world of industry/business. Teachers were teaching in the non-competence-based curriculum considered as “input-based” with traditional delivery practices. Many teachers were trained to teach in “time-and-calendar-dominated programs”, which are not in line with the main tenet of the competence-based approach: “given time, all students can learn” (Bousslama et al., 2003, p.204). TVET teachers will have to be trained to free themselves of traditional delivery practices.

In addition, the TVET administrators in Addis Ababa interviewed indicated that the turnover of knowledgeable and experienced teachers, especially in industrial and construction areas, is increasing because of attractive salaries in the private sector. According to the interviewed administrators, “the turnover may continue to be a serious challenge for the TVET system”. The TVET system appears to be unable to retain its experienced teachers, let alone bring in practitioners from industry.

2.4.4 The status of cooperative training

As stated in the 2008 TVET strategy, the apprenticeship-based industrial attachment scheme in place prior to 2008 was not effective due to “lack of cooperation of the employers, as they

were not consulted during the planning process” (MOE, 2008, p.30). A cooperative training scheme has therefore been included in the formal TVET programs in the form of “workplace internships” with the “involvement of a broad range of stakeholders from the private and public sectors as of 2008” (MOE, 2008, p.7). TVET proclamation 391/2004 states that partner enterprises shall receive and provide apprenticeship training to trainees, assign apprentices to places appropriate to their training, and ensure that apprentices acquire proper work experience. The enterprises are also obliged to evaluate, and to forward their opinion on the apprentices’ performance to the concerned organ. The Ministry of Education (2010) claimed that enterprises were involved and benefited from cooperative training. Nevertheless, as interviewed administrators indicated, the cooperative training is not practiced as envisaged in the TVET system.

An interviewed TVET coordinator stated the following regarding the attitude of enterprises to the cooperative training:

Although there are a number of enterprises who do volunteer, a significant number of enterprises selected are not willing to accept trainees; even if they are accepted, the enterprises don’t seriously follow up the trainees.

On the same issue, an interviewed TVET administrator said:

Companies are less willing to collaborate with TVET institutions and those few collaborating companies do not adequately supply materials during training. It is usual practice to see trainees placed in activities that do not match their training.

With regard to the enterprises’ assessment of the trainees’ workplace practice, one coordinator of the cooperative training scheme stated that:

The credibility and fairness of the enterprises’ assessment of trainees is questionable because most of the enterprises reported that the trainees had mastered all competencies (scoring 100% in all competencies), which is unrealistic.

2.4.5 The perception of parents, teachers and students regarding TVET

The attitudes of parents, students and teachers to TVET are not favorable. During the interview-based discussions with parents of grade 10 students, parents stated that they wanted their children to join college preparatory schools that lead to university education, not TVET. Parents considered university education a “better alternative for a better future”. Grade 10

students were asked in a questionnaire to indicate the purpose of their learning and whether TVET or university education is better for their future. Regarding the focus of their learning, about 67% responded that they study to enter preparatory schools. With regard to the contribution towards their future, 54% said that university education is better than TVET for their future, whereas 20% disagreed and 17.5% opted to agree somewhat.

In relation to the question on the nature of high school teachers' advice provided for grade 10 students, about 64% of the students responded that teachers mostly advise them to go to a college preparatory school. Interviewed TVET administrators and program coordinators were also asked where they prefer to send their children after completing grade 10. Their common response was that they want their children to join preparatory schools. Overall, parents, students and teachers seem to view TVET as a low-status alternative to college preparatory education. The perceptions of students and teachers regarding TVET have serious implications for the quality of the training because perception influences the motivation and commitment to learn and teach.

2.4.6 National occupational assessment for certificate of competence

The National Occupational Assessment was instituted in 2008, following the implementation of CBET. The aim is to establish whether TVET graduates have developed the level of competence envisaged in the occupational standards. The assessment results partly reflect the training situation in TVET colleges/institutes. Despite the effort made to improve the TVET system, the results obtained so far are below expectation. For example, the Occupational Competency Assessment Certification Center of Addis Ababa (OCACCAA) (2012) reported that, out of 3,743 candidates who took the national occupational assessment in the third round, 1,342 (35.6%) were found competent. In the fourth round, 13,375 were assessed and only 2,921 (22%) were declared competent. Out of the 9,193 candidates in the seventh round in the same period, only 1,590 (17.05%) were declared competent (OCACCAA, 2012). The overall pass rate in all seven rounds was 17.3%. Although the number of applicants increased across rounds and the pass grades vary from one area to another, most of the candidates were marked as “not yet competent.”

National Occupational Assessment results on 3 occupations with 17 specializations at a TVET college in Addis Ababa in the first quarter of the 2011 budget year, before the level-based assessment began, revealed the same. Out of the 4,158 candidates for national occupational assessment in the period mentioned, only 808 (19.4%) were found competent. For

occupations with many candidates, for example automotive, out of 113 candidates only 35 (31%) were found competent. In business, out of 3,952 only 740 (19%) were found competent. In construction only 33 (35%) out of 93 candidates performed well. In the case of specializations, for example, out of 1,409 level IV accounting and 295 purchasing candidates, only 121 (8.6%) and 140 (47%) respectively were found competent (OCACCAA, 2012). The extent to which the level-based assessment improves candidates' performance in national occupational assessment will be seen in the future.

2.4.7 Placement of trainees in the TVET system

In the current Ethiopian TVET system, those who score high in the grade 10 completion national examination (in 2012 2.7 and above on a scale of 4) enter college preparatory education, and those who score lower enter TVET. For example, the cut-off point to join level IV TVET in 2012 was 2.57 for males and 2.29 for females (Addis Ababa TVET Agency, 2012). The streaming system is tantamount to officially recognizing that TVET is for the “less able” or the “academically weak”. In general secondary education, no courses are offered to orient and guide students on occupational choice and future career development. Most high school students (84%) reflected that the school administration did not provide information on TVET as an alternative for their future career development. Although the Federal Government TVET proclamation 391/2004 (p.16) stipulated that the “*inclination and the will*” of students be considered for placement, students were neither asked about their interests and future career development nor engaged in activities that raise their interest in different occupational opportunities.

2.6 Discussion and conclusion

2.6.1 Discussion

The development of TVET in Ethiopia has passed through various stages and challenges. TVET in Ethiopia has emerged within the context of a conservative educational tradition in which people with manual skills have been despised for centuries. Originally the domain of non-formal training in the form of traditional apprenticeship, TVET has become a government-recognized program run parallel to academic education since the 1940s. Since then, TVET has significantly expanded nationwide. Like other African countries (AU, 2007), TVET has become a mainstream activity in the Ethiopian education system as an instrument for socio-economic development and poverty reduction. Educational reform in Ethiopia,

including TVET, has however been greatly influenced by the ideology adopted by governments at various times.

As revealed from the various documents referred to in this study (see Abudulahi, 1972; Negash, 2006; Tefera, 1996), educational reform has never been free from ideological influence, which has led to policy inconsistency from one period to the other. Despite the differences among the successive governments in the pattern of making reforms, the process of developing and executing reforms appears to follow a top-down strategy with authoritative implementation, without the full participation of the stakeholders. Intertwining educational reform with political government ideology, ignoring other voices and options, has been often cited as the major obstacle to success in educational reforms in the country. Many of the problems and challenges that the Ethiopian education system – including TVET – suffers appear to result from developing and implementing educational reforms without an adequate level of consensus among the stakeholders. This has led to instability in the Ethiopian education system (see Kiros, 1990; Negash, 2006; Tefera 1994).

In the 1970s and 1980s, TVET was an educational stream in which academically good students enrolled based on their interests and free will. However, limiting TVET streaming based wholly on grade 10 national examination results is perpetuating the belief that TVET is for the “academically poor”, which is the predominant perception of TVET in Africa (AU, 2007). Coupled with the unemployment issues faced by TVET graduates, the reduced attraction of TVET is partly attributed to the enrollment system that ignores interests and aptitude. This practice influences, and continues to influence, the perception, motivation and performance of students, teachers and parents. From the students’ responses, it could be inferred that trainees are assigned to TVET without having adequate background information about their future career development or an understanding and appreciation of TVET. Also, no mechanisms are available to measure or predict the potential or aptitude of students before streaming. Alemayehu (2010) argued that such a placement mechanism creates dissatisfaction among students and hinders the distribution of students with talent and aptitude for academic learning and vocational training. This necessitates the use of multiple criteria such as interest, aptitude and academic achievement for TVET enrolment.

Between 1994 and 2008, TVET graduates did not have the opportunity to enroll in higher education, and for a long time policymakers did not recognize the discriminatory nature of such a placement system and its effect on the career development of TVET graduates.

Although it has been possible for TVET graduates to enter university education since 2008, entrance criteria are very restrictive. TVET graduates are required to have two years of work experience after graduation and to pass the national occupational assessment and the university entrance examination. First, as many TVET students do not pass the occupational assessment in connection with the poor training process, the chances of attending higher education are slim for most graduates. Second, in a country where most TVET graduates remain unemployed for a long time, setting a two-year period of work experience as a criterion further narrows their chances. It seems that TVET is not yet free from being considered secondary to other levels of education, which is the case in many African countries (AU, 2007) and which contradicts the rationale and effort exerted to promote TVET in Ethiopia. In addition, the TVET and university admission systems change from one political governance to the other, indicating that all governments begin from scratch rather than learning from one another.

Competence-based VET is quite demanding in terms of teachers' competencies, commitment, responsibility, working culture, attitude and professionalism. Thus, TVET teachers need to be trained and must develop their competencies to fit the system and to be able to discharge their role as "coaches", "professional educators" and "managers of learning" (Biemans et al., 2009; Hoogveld, 2003; Lee, 2009; Wesselink, 2010). Teaching-learning in CBET requires employing various learning situations, such as individualized and self-directed learning, participatory-project-based learning, collaborative learning, negotiation, and learner autonomy, all of which are not primarily concerned with knowledge transfer (Biemans et al., 2004; Hoogveld, 2003; Wesselink, 2010).

However, the teachers involved at the time that competence-based TVET was introduced in Ethiopia had been trained in the traditional "curriculum-driven" system, without industrial experience and proper training. The orientation, motivation, understanding and experience of TVET teachers appears not to be in line with what CBET demands. Although these teachers have experience in teaching the modular-based TVET curriculum, the approach and the training modality they use to conduct the training is not in line with the requirements of competence-based TVET. Despite various rounds of teacher training, there are still situations in which teachers are unable to effectively implement competence-based TVET. Preparing teachers in line with the new educational innovation should therefore be given priority to realize the objectives of competence-based TVET.

By its very nature, competence-based TVET is resource demanding as it focuses on practical learning, which necessitates equipping the TVET centers with the necessary materials and facilities for individual and group practice. Resources are required to help trainees “engage in self-directed learning (library/on-line access), skills learning through deliberate practice with feedback or reflection on practice and observation of performance” (Chacko, 2014). One of the serious problems that competence-based TVET in Ethiopia is suffering from is scarcity of resources, especially resources for practical learning. This shortage of resources for practical learning contributed towards the weak achievement of trainees in occupational assessment (OCACCAA, 2012). In fact, resource-related problems are also seen in other African countries, where TVET lacks training equipment, tools and training materials (Atchoarena & Delluc, 2001; Ansah & Ernest, 2013). From what has been discovered in this study, it appears that a shortage of resources essential for practical learning is one of the characteristics of TVET in Ethiopia that requires immediate attention.

As TVET prepares the trainee for a specific vocation, the training has to be practical in nature. The role of industry-school relationships therefore plays a vital role, necessitating the collaboration of TVET centers with industry for improved practical training in industry and as a platform for teachers to gain practical experience (Ansah & Ernest, 2013). The relation between school learning and the workplace is fundamental for competence development (Biemans et al., 2009). TVET centers and industry must work together for trainees to gain real work experience, become efficient workers, and expand employment opportunities and their network (Lee, 2008). However, the link between TVET colleges and industry has not been well established in a way that allows trainees to develop their competencies. Such a situation is not unique to Ethiopia; it has been seen in many African countries. Atchoarena and Delluc (2001) observed that many countries in sub-Saharan Africa have weak industry-school relationships. Stating the experience of Ghana, Ansah and Ernest (2013) pointed out that training in many of the polytechnic centers in Ghana was devoid of practical exposure to industrial practice because of weak industry collaboration. In the case of Ethiopia, the link was implemented not only based on a weak industrial scenario, but also without adequate awareness and a positive attitude among employers. The logistics and attitude-related problems among TVET providers for running and monitoring the scheme have also imperiled the competence development opportunity.

2.6.2 Conclusion

The pattern of TVET development in Ethiopia and its implementation strategies are more a product of political than of collective decisions; this has made TVET unstable due to changes in political governance in the country. In addition, two other related factors have also made the TVET system operate under stringent conditions. These two factors are: various TVET approaches are implemented without proper alignment with the prevailing socio-economic conditions, in particular employment-generating capacity; and TVET is implemented without a strong foundation – administratively and in terms of manpower and materials/facilities. As a result, the system is currently facing serious challenges that cast a shadow over its achievements, attractiveness and future prospects.

The implementation of competence-based TVET appears to have taken place with the good intention of curbing problems of relevancy and employability as rapidly as possible but without a strong foundation, reflecting the belief that “requirements will be fulfilled through process.” Such a belief is disastrous when applied in education. The strategy may be developed, but its execution should have been gradual, considering resource and organizational capabilities. Given the economic capacity of the country, a continuous supply of resources to the required level will remain a challenge to the TVET system as far as running multiple programs is concerned because the government is overstretched in financing all the public educational programs. The situation suggests that the competence-based TVET reform lacks a well-crafted implementation strategy.

Overall, TVET seems to be in a dilemma. On the one hand, there is demand that necessitates expansion to increase access; on the other hand, there is a need to ensure quality to make graduates competent for employment. Both are essential but difficult to achieve in an economy operating on a weak industrial, technological and financial base. In the future, it is imperative to look into appropriate implementation strategies that objectively reflect the country’s resource capability. Several challenges also need to be overcome for the successful implementation of competence-based TVET. Much has been done and much is still left to be done to realize the accessibility and quality objectives of TVET in Ethiopia.

2.6.3 Limitations and suggestions for future research

One of the limitations of this study (research question 1) is that it was based on information compiled from different documents, such as secondary data, and therefore shares the

shortcomings of secondary data. The other limitation is that part of the study (research question 2) was based on perceptual data collected through interviews from a small sample. Although the respondents had extensive experience in the Ethiopian TVET system as teachers and administrators, which makes their responses credible, the data is still perceptual and therefore may not capture the complete picture of the challenges of TVET implementation in the Addis Ababa region. Future TVET research should therefore be conducted using a relatively large sample that includes people involved in TVET policy/strategy-making, teachers and administrators, supported by research methods such as school environment observation and focus group studies for better triangulation.

Another limitation of this study was that labor market stakeholders, such as company trainers who supervise TVET students in the workplace, were not involved in relation to the implementation of the cooperative training. Had they been involved, the reasons why many of them were not cooperative when it came to training would have been revealed by the study. Future research of this type should incorporate labor market stakeholders to provide a complete picture as far as the challenges related to cooperative training as workplace learning are concerned.

Chapter 3

Teachers' Participation in TVET Strategy and Curriculum Development and Implementation

Abstract

A technical-vocational education and training (TVET) strategy that promotes competence-based TVET has been developed and implemented in Ethiopia since 2008. As stated in the strategy, relevant stakeholders – including teachers – are to participate in the TVET strategy and curriculum development process and in the implementation of the competence-based TVET system. The aim of this study is to gain insight into the extent to which TVET teachers have participated in the strategy and curriculum development process and the problems they encountered during implementation. Data were collected from TVET teachers selected from different training programs at four polytechnic TVET colleges in Addis Ababa by means of questionnaires. The findings show that the TVET teachers considered that their participation was crucial for realizing the new reform in the TVET system. However, TVET teacher participation in strategy, curriculum development and implementation process/discourse was not significant. It appears that the competence-based TVET strategy was enforced on the teachers without clarity about what the system entails with regard to teachers' preparation, their role, attitude, work habits and pedagogical implications. TVET teachers were considered more as implementers than developers at the time that competence-based TVET was introduced. The study also shows that implementing the competence-based TVET system has been difficult for the teachers due to the lack of training materials, facilities, trainee motivation and guidelines. Involving teachers from the inception to the implementation stage of new innovations such as competence-based education is imperative as their involvement influences their attitude and motivation to work in a challenging situation.

3.1 Introduction

“Whatever levels of development a particular nation passes through will partly be a true reflection of the caliber of the teachers” (Oloruntegbe, K.O)

As stated in Chapter 1, a TVET strategy that promotes competence-based TVET has been developed and implemented since 2008. This TVET strategy gives space for stakeholders’ involvement to harness their “expertise, experience and capacities, in order to improve the relevance and effectiveness of the TVET system” (MOE, 2008, p.18). Among the different stakeholders mentioned in the strategy document are TVET teachers. The desire to involve teachers recognizes that teacher participation in educational reform helps ensure effective execution as they have the opportunity to add their knowledge, skills and experiences to enrich the reform (Carl, 2005).

Nevertheless, recognizing teacher participation is not sufficient; what matters most for achieving successful educational reform is the true involvement of teachers from the inception to the implementation of educational reform and in various ways (Carl, 2005). As Turnbull (2001) stated, “symbolic or poorly conceived participatory processes in any level of school decision making can result in unintended negative outcomes” (p. 250). Research findings indicate that teachers were excluded from involvement in the educational reform agenda in the Ethiopian education system (see Negash, 2006; Tefera, 1996). For example, referring to the educational sector review reform initiative in 1972, Negash (2006) and Tefera (1996) pointed out that neither teachers nor parents were in any organized manner involved, and the reform was not implemented primarily because teachers opposed it. The same was the case for the educational reform initiative of the late 1980s (Tefera, 1996). Referring to the New Education and Training Policy of 1994, Tefera (1996) argued that, although attempts were made to involve teachers in the discussion on the policy, the discussions appeared to be an “endorsement of the policy” (p.24).

Considering that teacher involvement in every aspect of educational reform is vital to translate policy and curriculum intentions into reality, the goal of this chapter is to explore the extent to which TVET teachers participated in the competence-based TVET strategy and curriculum development process and the problems they encountered during implementation.

3.2 Theoretical framework

The adoption of competence-based education is transformative (Mulder et al., 2007), with substantial implications for the TVET system in terms of implementation. According to Sturing et al. (2011), effecting innovations such as competence-based education necessitates changes that affect different facets of the education system, including the curriculum, curriculum practice in the classroom and work placements. Seezink et al. (2009) stated that schools involved in educational innovations such as competence-based training are engaged in radical educational reforms which have substantial implications both for the schools and teachers. Wesselink (2010) showed that introducing competence-based education has an impact on the roles teachers play in the competence development of students, meaning that teachers' conceptions and understanding of the innovation is critical. For example, teachers can no longer adhere to their former roles of knowledge transmission, and they need to change their practices toward knowledge construction when teaching in competence-based curricula (Seezink et al., 2009). In addition, the more open and performance-oriented type of assessment practices, in which students must demonstrate their competence, is a challenge to teachers' previous assessment experiences (Bell & Mitchell, 2000; Botha, 2000; Gulikers et al., 2013).

If teachers are to understand these practical role changes, teacher participation in the strategy and curriculum issues before implementation is essential as this creates a readiness to act willingly (Oloruntegbe, 2011). The curriculum is a written plan for action; it is teachers together with student interaction who translate the curriculum intent into practice by creating appropriate learning environments. Thus, teachers are key resources in realizing educational reforms and innovations such as competence-based education (Wesselink, 2010).

Recognizing and promoting the importance of teacher involvement in educational reform is reflected in the literature, which positions teachers as central to the reform's implementation (Anderson, 2002; Ben-Peretz, 1980; Croll et al., 1994; Handler, 2010). Referring to various researchers on the teachers' role, Gulikers (2013) argued that "teachers play a crucial role in whether or not an educational innovation will actually be implemented sustainably" (p.116). Teachers' understanding of the essentials of the educational scheme which serve as a foundation for the reform plays a crucial role in the success of the reform (Sturing et al., 2011), and teachers in any kind of educational innovation are considered both developers and implementers of educational reform (Ben-Peretz, 1980).

Teacher involvement in educational reform has also been considered to be an element of teachers' professional growth. Carl (2005) argued that "teacher involvement is essential not only for curriculum development, but also for nurturing the personal and professional growth for the teacher" (p.228). Furthermore, teacher involvement enhances commitment to systematic change (Anderson, 2002; Croll et al., 1994). Teacher involvement in the educational reform process increases teachers' motivation and enhances their intellectual and emotional engagement. It also builds confidence, endurance and innovativeness to face and manage challenges in the reform implementation stage. For educational reform success, "conversations with the relevant constituencies are important to continue building understanding and support as well as to inform state leaders about issues of importance to constituents" (Patrick & Sturgis, 2013, p.11). The likelihood of success of an educational reform is high if teachers are 'bought-in' before beginning to implement the reform (Turnbull, 2002). Thus, teachers are to be involved deeply from the outset (Sturgis & Patrick, 2010) and not to be treated as "simply bearers or enablers of policy developed elsewhere" (Lingard, 1996, p.66). In practice, educational policy and restructuring have happened to teachers rather than with them (Lingard, Hayes & Mills, 2003).

One of the educational reform areas in which teacher involvement is considered crucial is curriculum development and implementation (Carl, 2009; Oloruntegbe, 2011). The teachers' knowledge and sensitivity to practical problem situations means teachers should be provided with a primary role in the curriculum process that starts with the locating of curriculum problems (Ben-Peretz, 1980). Teachers' involvement in curriculum matters evolves from the fact that their position as teachers makes them take actions that greatly influence the realization of the curriculum goals. Christiaans (2006) argued that substantive curriculum reform cannot be implemented without the teacher supporting the change. Also, sustainable educational reform depends on teachers' acceptance of the purpose of the reform (Oloruntegbe, 2011). Thus, educational reform endeavors should consider teachers as vital partners, not as "mere implementers, but development agents who are able to develop, apply, and evaluate the relevant curriculum dynamically and creatively enhancing the process of owning the curriculum" (Carl, 2005, p.223). According to Campos (2005), limiting teachers' roles to "pedagogical-educational tasks, within and outside the classroom, relegates teachers to playing a passive role in regard to education management and policy" (p.12). Ben-Peretz (1980) mentioned two ways of engaging teachers in the curriculum development process:

(a) Involving them in the “external” curriculum development process which is carried out by central development agencies outside the classroom; and (b) involving them in the continuing process of adaptation and development of externally developed materials, thus teachers function as “user-developers” (p. 56).

Carl (2009) mentioned two ways of involving teachers in curriculum change: one that considers teachers as mere implementers of the curriculum developed by specialists elsewhere, and one that regard teachers as partners in the curriculum change process. In the first case, teacher participation is limited to the adherence to and application of what has been developed by the specialists. Curriculum reform is a top-down approach (bureaucratic model), which is detrimental to the process of taking ownership of the curriculum. In the latter case, teachers have the opportunity to be heard before the actual implementation (professional model) and have input to the initial curriculum development process. Referring to the idea of “teacher agency”, Bennett (2002, p.34) stated that teachers’ participation in curriculum “creation, deliberation, critique, and change” is essential to obtain the desired outcome because the final decisions about goals, purposes, assessment, strategies and materials lie with the teacher. Teacher participation in decision-making positively influences work effort, motivation and the quality of the decision and reduces teachers’ anxiety during curriculum implementation (Oloruntegbe, 2011; Scott-Ladd, Travaglione & Marshall, 2006).

In practice, however, research describes the limited engagement of teachers in meaningful decision-making as a major flaw in educational organization, leading to the failure of meaningful educational reform efforts (Handler, 2010; Oloruntegbe, 2011). Referring to the situation in South Africa, Govender (2008) indicated that teachers are marginalized in the policymaking arena in two ways: policymakers do not consult or engage them and, if teacher unions are involved, they do not adequately involve grassroots members in policy formulation activities within their organizations. Consequently, teachers tend to resist change and be reluctant to implement educational reform (Govender, 2008). Regarding curriculum innovations, Carl (2005) argued that the voice of the teacher is to a large extent ignored or not heard. Reflecting on experiences in sub-Saharan countries, Altinyelken (2010) pointed out that many of these countries have been engaged in educational system reform – particularly in curriculum development – in the last few decades. However, implementation in these countries has resulted in “less than desirable outcomes and led to a wastage of considerable resources, time and effort since well-intentioned policies were never translated into classroom reality” (Altinyelken, 2010, p.151). The main reason for this less than desirable outcome, according to Altinyelken (2010), was that “more attention has often been given to policy

formulation at the expense of implementation stage” and the absence of “well-planned and structured implementation” (p. 152). Implementation strategy deals with putting in place the appropriate conditions for teachers’ and students’ active engagement to realize the competence objectives in the curriculum, that is, “providing a learning environment conducive for learning and competence development” (Ellstrom, Ekholm & Ellstrom, 2008, p.5).

Tefera (1996) argued that the participation of stakeholders that are believed to be affected by the educational reform is not only necessary but also essential for the realization of the reform as intended. Such a view is in line with the “bottom-up” approach to educational reform which is a reflection of participative decision-making, contrary to the “top-down” approach where decisions are made by a few at the top, either totally alienating or with the piecemeal involvement of those directly or indirectly affected members of society. Participatory endeavors build a sense of belonging – owning the reform and accepting responsibility for its execution. Tefera (1996) considers consensus among the stakeholders as the bedrock for successful educational reform, which needs to be built by involving those who will be directly and indirectly affected by the reform.

In addition to teacher engagement, the effective realization of an educational innovation rests, in the final analysis, on the extent to which the proper conditions required to put the innovation into practice are sufficiently available in the school milieu. Knowledgeable and skilled teachers on the content and practical aspects (Wesselink, 2010) with proper motivation, commitment; adequate learning materials/facilities (Amedorme & Fiagbe, 2013); motivated learners responsible for their own learning (Bell & Mitchell, 2000; Seezink, 2009); a strong connection between school and the labor market/industry (Biemans et al., 2004; Lee, 2009; Mulder et al., 2007); and a learning environment that fosters competence development (Kouwenhoven, 2003; Wesselink, 2010) are among the many conditions that impact the successful implementation of the CBET curriculum. Although the strategy and curriculum may be innovative and relevant, the context of implementation is crucial because it determines the appropriateness of learning environments essential for competence development.

Based on the arguments above, the following three research questions were formulated to guide the study.

1. What is the extent of TVET teachers' participation in the development of competence-based TVET strategy, curriculum and implementation process/discourse?
2. What problems have teachers encountered when implementing the competence-based approach in TVET colleges?
3. How do teachers perceive the competence-based TVET system in relation to their participation and problems they encounter in implementation?

3.3 Method

This study used a mixed method research design, combining quantitative and qualitative approaches. The context and participants, instruments and data analysis are described below.

3.3.1 Context and participants

This study was conducted in four polytechnic TVET colleges in Addis Ababa which provide training at all levels (I-V) with a large number of specialized training programs, teachers and students. TVET teachers (n=113) from the four polytechnic colleges were included in the study. Most of the teacher participants were male (78%) and only 22% were female. Based on specialization, 40% were from soft skill occupations (business, IT, hotel/tourism, etc.) and 57% were from hard skill occupations (construction, automotive, electricity, garments, etc.), while 3% did not state their specialization. As to qualifications, 74% were first degree holders, 21% were Master's degree holders and 5% did not indicate their qualification. About 70% of the teachers had teaching experience of more than ten years in TVET programs. Most of the teachers (68%) had over five years of teaching experience in competence-based TVET. The majority (74%) of the teachers were graduates of teacher education programs from various universities in Ethiopia. Two deans and two program coordinators with much experience in teaching and administrative services in various TVET colleges were also involved in the study to include the administrative perspective on teacher involvement.

3.3.2 Instruments

Data from teachers were collected using a questionnaire with a six point Likert-type scale with response categories ranging from strongly disagree=1 to strongly agree=6 (the scale is the same for all tables). The questionnaire for this study contains four sections: Section 1 on teachers' participation in the TVET strategy development process (3 items), Section 2 on curriculum development and implementation (7 items), Section 3 on implementation

problems encountered by teachers (14 items) and Section 4 on teachers' overall perception of the TVET system in light of their participation (3 items). Items such as "Teachers got opportunities to comment or debate on the new TVET strategy before its implementation" and "Teachers come together to discuss curriculum issues with the department head" were included in Section 1 and Section 2 respectively. Items such as "Teachers lack knowledge and skills to train in all competencies" and "Admission to middle-level TVET should be after completing grade 12, not grade 10" were included for Section 3 and Section 4 respectively. A few open-ended questions such as "Will you continue as a TVET teacher if you get a chance to be employed in another organization?" were also presented to the teachers. A total of 160 questionnaires were distributed to TVET teachers in the four polytechnic colleges, of which 126 (79%) were returned. However, 13 questionnaires were not included, because they were filled in either incompletely or incorrectly. Thus, 113 (70%) questionnaires were analyzed.

Semi-structured interviews were used to collect data from the administrators and training coordinators to incorporate their point of view on teacher participation. Semi-structured interviews make the interview process flexible to be able to incorporate additional questions that provide explanations or elaboration on the responses. For example, questions such as "To what extent did teachers participate in the TVET strategy development process?" and "What major problems did you encounter in implementing competence-based TVET?" were among the questions presented to the interviewees. On average, the interviews with the administrators took about 45 minutes. The interviews conducted with the deans and coordinators were recorded as field notes.

3.3.3 Data analysis

The quantitative data collected through the questionnaire were analyzed using descriptive statistics, namely mean (M) and standard deviation (SD) to answer research questions one and two of this chapter. A reliability test was conducted using Cronbach's alpha between the variables used to measure teacher participation in strategy development discourse ($\alpha=0.81$ for 3 items), curriculum development and implementation ($\alpha= 0.74$ for 8 items), problems teachers encountered ($\alpha= 0.74$ for 13 items), teachers' perception of their participation ($\alpha= 0.78$ for 3 items) and overall teachers' perception of the CBET TVET system ($\alpha= 0.67$ for 9 items). The Cronbach's alpha values are in the acceptable range according to George and Mallery (2003).

A Spearman's Rank Correlation was conducted to answer research question three. The correlation test was run to see whether teachers' participation in strategy development discourse, curriculum development and implementation, and problems teachers encountered have a relationship to the teachers' overall perception of the competence-based TVET system. The responses to interview questions were presented along with the pertinent items in the teacher's questionnaire. The responses to the open-ended questions were categorized, counted and reported using percentages.

3.4 Results

The main objective of the study was to examine the extent to which teachers participated in competence-based TVET policy, curriculum development and implementation and its implication for teachers' perception of the competence-based TVET system. The results of the descriptive cross-sectional survey and interview are presented below.

3.4.1 TVET teachers' participation in strategy development process/discourse

This section explores whether TVET teachers participated in competence-based TVET strategy development process/discourse before and after its implementation (see Table 3.1).

Table 3.1. Teachers' participation in strategy development process/discourse (N=111; M=mean, SD=standard deviation; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6)).

Item	Indicators of participation	M*	SD
1	Teachers commented on the previous strategy before CBET was effected	2.65	1.59
2	Teachers got opportunities to comment on the new strategy	2.27	1.40
3	Teachers gave feedback on the new strategy during implementation	2.73	1.43
Average of means and standard deviation of all items		2.55	1.47

*mean values computed out of 6 and mean values below 3.5 (mid value of the scale) are poor and above 3.5 are good.

Teachers neither commented on the previous TVET strategy, got the opportunity to comment on the outcome-based strategy nor were encouraged to provide feedback on the new TVET strategy at any time during implementation. Although the standard deviations are relatively high, showing that teachers differ in their responses, the result (the average of means, which is far below the middle value of the scale (3.5)) suggests that TVET teachers' institutional level participation in strategy development process/discourse was low. An interviewed TVET college administrator who had participated as an expert in the strategy document approval consultative meeting had the following to say about how the strategy was developed and approved:

“An expert from South Africa visited four regional states with individuals assigned from regional TVET Agencies and the Ministry of Education studied the training

conditions in three regions and came up with a TVET strategy document. The strategy document was presented to representatives of the Ministry of Education and regional education bureau in a sort of a consultative meeting, and the document was approved after some deliberations”.

With regard to whether the document was presented for deliberation at TVET college level for administrators and teachers after endorsement, the collective response of TVET administrators is summarized as follows:

“After the document was approved, orientation-type trainings were given to TVET administrators and teachers to create awareness on the nature of outcome-based approach, directed at the implementation. No intensive discussions and comments were made by teachers in the orientation session. The new approach was practiced without being internalized by the implementers- teachers and administrators; the document was not sent to colleges and teachers for deliberation and feedback purpose; it was not presented for institutional debate before it was endorsed. So, very difficult to say the strategy development process was participatory; the main problem was that there was no adequate preparation for implementation”.

3.4.2 TVET teachers’ participation in the curriculum development and implementation process

TVET teachers were asked to reflect on the extent to which they participated in the curriculum development and implementation process (see Table 3.2).

Table 3.2. TVET teachers’ participation in curriculum matters (N=111; M=mean, SD=standard deviation; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6)).

Item	Indicators of participation	M	SD
1	Participate in developing modules or learning materials	3.96	1.49
2	Discuss overall performance of department’s outcome	3.66	1.38
3	Teachers and administrators evaluate institutional performance	3.53	1.30
4	Teachers and department heads meet to discuss curriculum issues at dept. level	3.47	1.35
5	Make changes in the subject matter with new contents at dept. level	3.21	1.55
6	Teachers discuss module content before use at dept. level	3.15	1.49
7	Teachers forward comments on curriculum to management at any time	2.91	1.33
8	Teachers and admin. meet to discuss curriculum issues at institutional level	2.70	1.23
Average of means and standard deviation of all items		3.32	1.39

According to the teachers, TVET teachers have the opportunity to prepare modules or learning material in their respective programs and also participate in evaluating institutional and department performance. However, the closeness of the mean values of the items to the scale average (M=3.5) suggests that the level of teacher participation at the institutional and departmental levels is not highly significant.

In relation to items 5-8, the mean values of all the items are below the scale average of 3.5, indicating that TVET teachers had little involvement in discussion with administrators at the departmental level on curriculum matters, commenting on the curriculum and discussing module content, and little autonomy to make changes with new content and practices. The

aggregated mean ($M=3.32$, $SD=1.39$) indicates that teachers' overall involvement in curriculum related issues in the TVET system was marginal.

With regard to the curriculum development process, the common response of TVET college administrators confirmed the perception of the teachers. The administrators stated that, before 2011, a model curriculum for every specialization was prepared at the center and sent to the colleges for direct implementation because the TVET colleges were not capable of assuming responsibility. As of 2011/12, colleges were allowed to develop their own curriculums. However, because many of the colleges lack qualified and experienced teachers in many specializations, the curriculums were developed by teams of teachers – teachers selected from different colleges based on the occupational standards facilitated by the Regional TVET Agency. Teachers who were not in the curriculum development teams were not formally engaged in discussions on the curriculum developed before implementation. The curriculum developed at the agency level by the team of teachers was implemented directly.

TVET teachers were also asked to reflect on their overall impression of the strategy and the curriculum development and implementation process (see Table 3.3). A modest majority of TVET teachers viewed the process of strategy and curriculum development and implementation as non-participatory and non-transparent.

Table 3.3. Teachers' perception of strategy/curriculum development and implementation process (N=111; M=mean, SD=standard deviation; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6)).

Item	Statement	M	SD
1	TVET strategy and curriculum development was participatory	3.14	1.24
2	TVET strategy and curriculum development process was transparent	2.95	1.14
3	Strategy and curriculum decisions with little involvement of teachers	3.82	1.42

Overall, their impression was that strategy and curriculum decisions did not involve teachers much, although the majority of teachers believed that their participation significantly influences their action/behavior and student achievement.

3.4.3 Implementation problems encountered by TVET teachers

This section examines the extent to which proper teaching-learning conditions were fulfilled in the TVET institutions for TVET teachers to effectively implement the new outcome/competence-based curriculum (see Tables 3.4a and 3.4b below). According to the TVET teachers, their knowledge and skill level in all competencies was more or less average, suggesting that a significant number of respondents doubted whether they had sufficient knowledge and skills in some competencies.

Table 3.4a. Implementation problems teachers encountered (IPTE) (N=111; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6); M=mean, SD=standard deviation).

Item	Statements	M	SD
1	Teachers lack knowledge and skills to train in all competencies	3.57	1.27
2	Teachers visit students in cooperative training with no or little difficulty	3.38	1.49
3	There are sufficient guidelines for teachers for OBET	3.00	1.19
4	Sufficiency of training materials/facilities for individual/group work	2.90	1.34
5	Individual students use materials for adequate time for practical learning	3.01	1.39
6	Trainees' ability to quickly understand what they are taught is high	2.98	1.17
7	Trainees are capable of learning in the English language	2.77	1.34

For many TVET teachers, visiting students on cooperative training (internship) was difficult, the implementation guidelines provided were inadequate to support teachers for appropriate implementation, training materials/facilities were insufficient, and the time the students spent using the facilities was inadequate for practical learning.

According to the TVET teachers, TVET students' motivation to take their own initiative to learn was weak (see Table 3.4b). The teaching-learning condition was not favorable for individual competence assessment and conducting continuous assessment, although class size seemed to vary between colleges and/or training areas.

Table 3.4b. Implementation problems teachers encountered (IPE) (N=111; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6); M=mean, SD=standard deviation).

Item	Statements	M	SD
8	TVET students usually take their own initiative to learn	3.21	1.04
9	Learning condition favorable to assess individual learners' competence	3.36	1.28
10	Class size is small, thus suitable for continuous assessment	3.42	1.52
11	Frequent curriculum changes affected planning and teaching-learning	4.46	1.54
12	Department has a strong link with companies for workplace practice	2.88	1.35
13	Teachers' effectiveness assessed based on teacher accomplishments	3.27	1.49

The students' ability to understand what they have been taught quickly and to learn in English were rated below average, indicating that students lacked capability in foundation skills. For many teachers, the teaching-learning conditions were unstable because of frequent curriculum changes, which greatly affected their teaching plan. The link between training departments and industry for workplace practice was rated low by the majority of the teachers. Teachers responded that accomplishments (merit) was not the only factor used to assess teachers' effectiveness in TVET institutions in Addis Ababa, suggesting dissatisfaction among teachers on the criteria for rating teacher performance.

3.4.4 TVET teachers' overall perception of the competence-based TVET system

Teachers were asked to reflect on major strategic components of the TVET system to infer their overall perception of competence-based TVET in Ethiopia (see Table 3.5).

Table 3.5. Teachers' overall perception of the CBET TVET system (N=111; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6); M=mean, SD=standard deviation).

Item	Statement	M	SD
1	Admission to middle-level TVET should be after completing grade 12, not grade 10	3.88	1.66
2	Admission to middle-level TVET be based on interest, not national exam result	4.15	1.53
3	Current placement of students in TVET negatively affects quality of the training	3.82	1.26
4	TVET system in Ethiopia focuses more on access than quality of the outcome	4.08	1.32
5	Expanding TVET for access does not go with ensuring quality	3.83	1.48
6	The current national occupational assessment (NOA) does not assure quality	3.78	1.45
7	COC measures high standards which does not match the training reality	3.77	1.37
8	Training specializations is better than a comprehensive training package	3.72	1.54
9	TVET training programs match the employment capacity of the economy	3.12	1.23
Average of means and standard deviation of all items		3.79	1.42

The modest majority of TVET teacher respondents were in favor of middle-level TVET enrolment after completion of grade 12, not grade 10, and enrolment based on interest, not just national exam results as is currently the case. The modest majority of teachers also believed that the current placement of students in TVET has negatively influenced the quality of the training. TVET teacher respondents appeared uncomfortable on the occupational assessment's role in assuring quality, and also reflected a mismatch between the national assessment and students' development during the training. Although a modest majority of teacher respondents favored specialization training instead of comprehensive training, a significant number of them appeared not to favor specialization. Many teachers considered TVET in Ethiopia to be focused more on access than on quality, and the expansion of the TVET program to lack alignment with the employment capacity of the economy.

In addition, a Spearman's Rank Correlation (r_s) test (see Table 3.6) was run to determine the possible relationship between teachers' involvement in strategy development discourse (Table 3.1), curriculum development and implementation (see Table 3.2) and problems teachers encountered (Tables 3.4a and 3.4b) and teachers' overall perception of the competence-based TVET system (Table 3.5). The results showed that there was a moderate positive relationship between teachers' participation in strategy development discourse and teachers' overall perception of the TVET system and that this was statistically significant ($r_s=.29, p<0.05$). Teachers' participation in curriculum development and implementation was also moderately correlated with teachers' overall perception of the TVET system ($r_s=.42, n= p<0.05$).

Table 3.6. Correlation results on the relationship between strategy development, curriculum development and implementation, problems teachers encountered and TVET teachers' perception (Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=somewhat agree; 5=agree and 6=strongly agree; M=mean; SD=standard deviation).

Item	M	SD	1	2	3
1. Strategy development	2.55	1.47	1		
2. Curriculum devt. and implementation	3.32	1.39	.23*	1	
3. Problems teachers encountered	3.24	1.34	.24**	.45**	1
4. TVET teachers' perception	3.79	1.42	.29*	.42*	.41*

* Correlation is significant at 0.01 level (two-tailed)

** Correlation is significant at 0.05 level (two-tailed)

Implementation problems teachers encountered was also positively correlated with teachers' overall perception of the TVET system, which is also statistically significant ($r_s=0.41$, $p<0.05$). From this analysis, it appears that teachers' participation in curriculum development and implementation has a higher correlation with overall perception of teachers than teachers' involvement in policy matters. In all, the result suggests that if teachers are involved in strategy and curriculum development and the implementation process with appropriate implementation conditions, they will have a positive perception of competence-based TVET.

In the same questionnaire, teachers were asked general questions related to the TVET system in addition to the tabulated issues. For example, they were asked to reflect on whether the former TVET system or the current OBET system enhances quality. A slight majority of teachers were in favor of the CBET approach (mean=3.39, SD=1.25), suggesting that a significant number of teachers was unclear about the contribution of the OBET approach to ensuring TVET quality in practice. In addition, a significant number of TVET teachers did not believe that TVET colleges produce a competent labor force (mean=3.37, SD=1.32).

TVET teachers were also asked an open-ended question regarding what they would recommend to their relatives in grade ten after completing secondary education. About 75% of the TVET teachers opted for preparatory schools instead of TVET. This response suggests that TVET teachers are not confident of the training process in the TVET system. In answer to the question whether TVET teachers would discontinue teaching in TVET colleges if they got an opportunity to be employed elsewhere, about 72% said 'Yes'. This suggests that TVET teachers lack the motivation to stay in the TVET system.

3.5 Discussion and conclusion

3.5.1 Discussion

The purpose of this study was to examine the extent to which TVET teachers have participated in competence-based TVET strategy and curriculum development and implementation discourse, the implementation problems teachers encountered and the relationship of that with their perception of the TVET system.

The results of research question one show that the participation of TVET teachers in strategy and curriculum development before and after the implementation process appeared to be unsatisfactory for the majority of TVET teachers. Teachers' participation was limited to a few instruction-related activities such as teaching/learning material preparation. When introducing competence-based education, both conceptual and practical clarity are essential (Wesselink, 2010). However, it appears that TVET teachers and TVET colleges began executing the new competence-based TVET system with a low awareness, even though teachers believe that their involvement is crucial. Thus, the strategy was enforced without TVET teachers and administrators understanding the new outcome-based education that entails drastic structural change and a shift in attitude, practice and working habit (Seezink, 2009).

Referring to a similar scenario in South Africa in 1999 when the new outcome-based approach was introduced, Janson (1998) stated that a curriculum document on outcome-based education suddenly came out which presented the teachers "with a curriculum discourse completely foreign to their understanding and practices" in which "teachers had no involvement in the conceptualization of outcome-based education or in decision about its adoption" (p.2). In the same scenario, referring to the experience of Nigeria, Oloruntegbe (2011) reported that teachers are not given in-depth knowledge on the educational reform agenda or innovation although they are considered to be prime movers of curriculum reform. TVET teachers in Ethiopia have had a similar experience to their Nigerian counterparts, with teachers being looked on as "recipients" rather than "developers" (Carl, 2005). Synthesizing research on the issue, Swanepoel (2008, p.50) asserted that the practice of not involving teachers in educational reform not only advertently affects teachers' "professional life and professional growth" but also "jeopardizes the implementation of educational change in general". According to Altinyelken (2010, p.152), teachers play a pivotal role in the reform process, thus their competence, motivation, commitment and attitude towards proposed innovation influence their capacity and willingness to implement change. These insights need

to be considered in the process of TVET strategy and curriculum development in Ethiopia in the future.

The results of research question two show that TVET teachers were faced with several problems that prevented them from implementing the competence-based TVET curriculum in a manner that would ensure the quality of the outcome. A significant number of TVET teachers were even doubtful of their ability to provide the training up to the standard required, despite the various trainings they received, and despite even having passed the teachers' competence assessments as claimed by the administrators. Despite this external quality assessment being introduced to enhance the quality of the TVET outcome, it appears that what is taking place in the TVET colleges has not yet been aligned with what the assessment intends to measure, in other words TVET graduates meeting occupational standards. Even after five years of experience with outcome-based education, many TVET teachers are still of the opinion that the TVET system is more focused on access and wider participation in TVET, which has implications for the quality of the outcome. This view might be associated with the shortage of training materials and facilities, insufficient time to use available facilities for practical learning, the low learning/understanding ability and motivation of students to learn and the weak internal quality monitoring system. With regard to training resources, Rogan and Grayson (2003) and Amedorme and Fiagbe (2013) pointed out that physical resources greatly influence the capacity to support innovation because they can hinder the effort of teachers and undermine learners' efforts to focus on learning. This suggests that aligning the introduction and expansion of the training program with resource capability is crucial for realizing desirable educational outcomes.

The difficulty of conducting continuous assessment on an individual basis has also impacted the competence development process. As well as this, the lack of a strong link between TVET colleges and industry and the difficulty teachers face following up students on cooperative training may have jeopardized the advantage that the students could get from good practical experience in the workplace. This cooperative training would have compensated the materials and facilities related problems and enhanced the acquisition of practical experience by the students. This might be the reason why many TVET teachers are doubtful of the quality of the monitoring system exercised in TVET colleges.

The results of research question three show that TVET teachers are in favor of interest-based placement in TVET rather than placement based exclusively on the results of national

examinations, which has implications for the competence development effort. The current placement in TVET is contrary to that stated in the TVET proclamation 391/2004, which is that the “inclination and the will” of students be considered for placement. Although the modest majority of TVET teachers believe that admission to TVET for middle-level training should take place after completing grade 12, a significant number of teachers still supports admission from grade 10. The response favoring placement after grade 12 might have emerged from the teachers’ belief that TVET trainees lack the required academic background, maturity and ability to communicate in the language of instruction, which negatively influences the trainees’ achievement. The response suggests that balanced criteria be applied, including interest for admission for middle-level TVET. The results further indicate that teacher participation in educational reform – strategy formulation, curriculum development and implementation – is linked to the teachers’ perception of the TVET system or educational reform. This suggests that the extent to which teachers’ participation in the educational reform agenda meets their expectations somehow influences their attitude and motivation to practice, which in turn affects the quality of their work.

The results of research question three further reveal that, although about 54% of teachers believe that the outcome-based system is better than the pre-2008 TVET system for enhancing quality, a significant number of TVET teachers tend to favor the pre-2008 system. This finding suggests that a significant number of TVET teachers are doubtful of the current OBET implementation conditions. The modest majority of TVET teachers believe that teacher evaluation is not merit-based, suggesting that other factors, which might not be clear to the teachers, were also applied to assess teachers’ effectiveness in TVET institutions in Addis Ababa. Also, the administrators’ professional competence to lead a competence-based system appeared to be not well developed. Many TVET teachers were also dissatisfied with the current situation in the TVET sector and are waiting for the opportunity to leave the profession. This might be one of the reasons why teachers favor college preparatory education over TVET. Thus, it cannot be claimed that TVET teachers are working diligently with commitment in the TVET system, and it is under these unfavorable conditions that TVET teachers are expected to work towards training a competent labor force.

3.5.2 Conclusion

Based on the results of this study, TVET teachers' perception of their participation in the strategy, curriculum development and implementation process/discourse was minimal, although teachers consider their participation to be crucial for realizing the new reform undertaking in the TVET system. The TVET strategy was enforced without TVET teachers and administrators understanding the new competence-based education, which entails drastic structural change and a shift in attitude, practice and working habit. As a result, teachers were lacking clarity on the contribution of the new outcome-based system. TVET teachers were regarded as implementers of a decision rather than having a stake in the issue, which they believe also influenced their actions and training outcome. This lack of clarity appeared to result from low involvement and the inadequate preparation of teachers before implementation. Consequently, TVET teachers did not have full confidence in the current TVET system. Moreover, there is a positive relationship between teachers' participation in policy and curriculum discourse and reform implementation and their perception of the TVET system as a whole. If teachers are involved in a conducive implementation environment, they have a more positive perception.

It is important to consider that the realization of competence-based education is a function of the extent to which teachers are involved both intellectually and emotionally in the process. The Ethiopian education system, including TVET, involved a well-entrenched, input-based traditional educational delivery system at every level of the educational ladder for many years, and was accompanied by a shortage of educational resources. In such a school environment, government, society, parents and students still expect much from teachers. Thus, involving teachers from the inception to the implementation stage of new educational reforms is imperative for the effective realization of the reform's objectives.

3.5.3 Limitations and implication for research and practice

Although this study has shown the status of TVET teachers' participation in competence-based TVET strategy and curriculum development and its relations with teachers' perception, it is not without limitation. The study did not explore the impact of the teachers' participation in competence-based strategy and curriculum development directly on their performance in the teaching-learning process and their motivation to work; rather it was based on inference from the teachers' reflection on some key aspects of the TVET program, such as national assessment, student placement, the focus of TVET, and so on. The involvement of a small

number of TVET administrators also narrowed the perspective of the administrators on the implementation of CBET. Future research needs to be carried out to measure the impact of teachers' involvement in the design and implementation of new educational reforms along with other variables on teachers' motivation towards their classroom work.

Chapter 4

Realization of Competence-based Education and Training: Teachers', Students' and Graduates' Perspectives

Abstract

Ethiopia is implementing a competence-based curriculum in TVET based on labor market needs. Whether the TVET curriculum implementation is competence-based, and the relation between the competence-based training and graduate performance in the market, have not yet been investigated in light of the principles of competence-based education and training (CBET). This study therefore investigates the realization of CBET and to what extent that influences graduate job performance. Data were collected through questionnaires completed by TVET teachers, students, and employed graduates of four polytechnic TVET colleges in Addis Ababa, as well as job supervisors of the employed graduates. The results show that competence-based TVET is practiced in the TVET system in Ethiopia and that this is recognized by teachers and students. However, TVET program implementation in polytechnic TVET colleges is not fully performing in accordance with the principles of competence-based education and training. The Ethiopian TVET system is therefore between “partially-competence-based” and “largely competence-based” levels of realization. A positive relationship between the ‘competentiveness’ of a TVET program and graduates’ job performance in employment has also been observed. The overall rating of graduates’ performance in the market appears to be satisfactory. Building a competence development-focused strong learning environment and monitoring progress by involving teachers, students and graduates to improve the ‘competentiveness’ of programs through constructive interventions are critical in competence development and significantly influence the quality of the TVET outcome.

4.1 Introduction

The need for a competent labor force that can productively participate in realizing national development goals is one of the reasons for reforming educational systems based on competence-based education (Mulder et al., 2007). The goal to produce a competent labor force has prompted different countries to adopt competence-based education in their vocational education in the past decades (Biemans et al., 2004; Seezink, 2009; Struyven & De Meyst, 2010; Wesselink, 2010). The quest for good quality vocational education that reflects labor market needs has been considered as the driving force behind competence-based vocational education (Seezink, 2009). Thus, the shift to CBET aims to make educational programs relevant to job requirements by incorporating new developments in the marketplace (Baartman et al., 2007), and to bridge the gap between education and job requirements (Le Deist & Winterton, 2005).

With the aim of making TVET training relevant to workplace requirements, Ethiopia is implementing competence-based curricula in TVET based on labor market needs (MOE, 2008). National occupational standards were developed as a basis for curriculum development and assessment, followed by the Ethiopian National TVET Qualification Framework (NTQF) in 2010. The NTQF provides training outcomes defined and verified by occupational assessment against the occupational standards that lead to formal certification (MOE, 2011). The NTQF stipulates the occupational qualifications ranging from level I to level IV with varying complexity, the workplace level of competence, and rules for horizontal and vertical mobility (MOE, 2011). The Federal and Regional TVET Agencies provide guidelines on assessment, curriculum development and training materials to support implementation. Regional and institution-based assessments with theoretical and practical components have been put in place to measure students' competence. The TVET system also incorporates a "cooperative training" scheme where students are placed in companies for practical experience supervised by workplace trainers (MOE, 2010).

From what has been stated above, policy (e.g. NTQF), regulatory (e.g. Federal TVET Proclamation 391) and supportive mechanisms (e.g. curriculum development guides, counselling, teacher training) are available and implemented. Given these mechanisms, the conditions under which the competence development process takes place in the TVET colleges have implications for the graduates' level of competence after completion. Thus, it is important to examine the extent to which the competence-based TVET program has been

realized in light of the competence-based principles. In addition, TVET graduates' reflection on their job performance in light of their capability, coupled with job supervisors' reflections on graduates' job performance, could also show the realization level of the competence-based curriculum, and whether that enhances graduates' job performance.

This study examines the extent to which the competence-based TVET curriculum in Ethiopia has been realized in light of the principles of CBET as perceived by teachers, students and employed TVET graduates, and its relationship with TVET graduates' job performance. The results of the study may serve as an input to analyze the strengths and pitfalls of realizing competence-based programs for making constructive interventions to improve the competence development process in TVET colleges.

4.2 Theoretical framework

TVET aims to produce a competent labor force and, by its very nature, is about building competence. Competence is conceptualized as “the capability of a person or organization to reach specific achievements comprising of knowledge, skills and attitudes, necessary for performing tasks, solving problems and more generally, functioning in a certain profession, organization, position or role” (Mulder, 2001, p.152). Thus, competence embraces the integration of knowledge, skills and attitudes applied to perform complex tasks to the level of proficiency required in professional situations (Kraker, Launsu & Dam-Mieres, 2007). Various other authors have proposed similar conceptualizations, but they all circle around the notion of being capable to perform (Klink, Boon & Schlusmans, 2009) and dealing with future and unforeseen situations (Illeris, 2009).

4.2.1 Competence-based vocational education

Although various attempts have been made to define competence-based vocational education (CBVE), no consensus has been reached because of different conceptualizations of competence (Biemans et al., 2004; Smith, 1999; Wesselink, 2010). Synthesizing various research findings, Sturing et al. (2011) indicated that, in the 1960s and 1970s, CBVE was influenced by the “task-based behavioristic approach” to competence where competence is characterized as a detailed description of fragmented task elements and equating task and competence. In the 1990s, the “generic approach to competence” shaped CBVE, where competence was viewed as unchangeable and context-independent. To overcome the risks of the disintegrative approaches, “more comprehensive (multidimensional and holistic) approaches of CBVE have been developed built on the contemporary learning perspectives

such as social-constructivism” (Biemans et al., 2004). In the holistic perspective, CBVE “endeavors to support learners in acquiring and integrating the knowledge, skills, and attitudes (i.e., competences) needed for their chosen vocation, rather than focusing on knowledge transmission” (Seezink, 2009, p.15). Thus, CBVE is an approach in which competencies needed for employment, that is, professional practice, and productive participation in society are the basis for curriculum development instead of academic disciplines (Kouwenhoven, 2003; Wesselink, 2010). As an outcome driven innovation, CBVE deals with the outcome measured against specified standards related to industry/professions, in other words what one does in professional practice (Kafyulilo, Rugambuka & Moses, 2012; Schilling et al., 2010; Smith, 1999).

CBVE is operationalized by various holistic competence development principles as defined by Wesselink (2010) and Sturing et al. (2011). It is within these holistic principles that competence-based vocational education could be conceptualized (Wesselink, 2010). The CBVE principles and the stages of realization included were transformed into a Comprehensive Competence-based Education model, primarily to support teachers in implementing competence-based vocational education (Sturing et al., 2011; Wesselink, 2010).

4.2.2 The comprehensive competence-based education model

This study is guided by the comprehensive CBVE model. This model was chosen for this study because the model is explicitly for vocational education, unlike other models such as Powerful Learning Environments (De Bruijn, 2005) which focus on general characteristics of competence-based programs. The comprehensive CBVE model also encompasses principles about what competencies are and how these competencies are to be developed. The comprehensive CBVE model incorporates what the outcomes of the programs are and how these outcomes are articulated in the form of qualification profiles and the content and practices in the curriculum. The model also includes how the content should be delivered, the learning environments to be created, the role of teachers and students, how competences are to be assessed and students’ future career development and lifelong learning. Moreover, the comprehensive CBVE model incorporates six levels of implementation that describe the extent to which a program is competence-based, ranging from “not competence-based” through “partially competence-based” to “fully competence-based” (Sturing et al., 2011). The model therefore serves as an instrument to measure the extent to which curriculum practices are aligned with the principles of comprehensive competence-based vocational education.

The CBVE model, therefore, guides the design and implementation of curriculum, instruction and learning tasks in schools (Wesselink, 2010). Initially, the model consisted of eight principles with four levels of realization. Based on the work of Wesselink (2010), Sturing et al. (2011) conducted an empirical study to validate the model and added two principles and one level of realization that raised the principles to ten and the levels to five. Linking the principles to implementation levels will provide a clear picture about the degree of application of the CBE principles in a program. Based on Sturing's work, the ten CBE principles are presented as follows with brief clarification.

1. *The study program is based on core tasks, working processes and competences which collectively define the qualification or graduate profile.* According to this principle, what students should know after completing the program and the qualities, skills and attributes that students obtain from the program are expressed in the qualification profile in the form of competences students need to develop with different levels of proficiency (Mulder et al., 2007).
2. *Vocational core problems are central.* Professional situations (key job aspects) that call for the integration of theory and practice are fundamental. The design of the CBE curriculum, learning activities and assessment are based on the occupational core problems (Wesselink, 2010).
3. *Learning activities take place in different concrete, meaningful vocational situations.* As CBE's orientation is towards preparing for future jobs and/or roles, the learning activities must be relevant to the competences articulated in the two principles above. At the same time, the context of practicing must be similar to workplace (professional) practice, in other words authentic workplace situations so that students engage in activities that reflect their future jobs.
4. *Knowledge, skills and attitudes are integrated.* In CBE, the teaching of knowledge, skills and attitudes should be integrated instead of teaching them separately. It is the application of knowledge, skills and attitude as a whole in a specific context that demonstrates and describes professionally desirable practice.
5. *Students are regularly assessed.* In CBE, the focus is on students' competence development through engaging students in different knowledge and practice oriented learning experiences. Thus, the performance of the students at every stage in the process of their learning must be assessed while the activity is being undertaken (concurrent

assessment for feedback on the correctness of the procedures followed) and after the task has been completed, with the demonstrated performance matching the appropriate standards (the outcome).

6. *Students are challenged to reflect on their own learning.* Reflection is the act of looking back to process experiences, both while working on a task (reflection-in-action) and after completing a task (reflection-on-action) (Harford & MacRuairc, 2006; Morris, 2010). As learning involves knowing, understanding and applying, students should think and reflect on what they have learned and understood, how they have learned it, whether they have really learned something, and the problems they encountered in the learning process.
7. *The study program is structured in such a way that the students increasingly self-steer their learning.* This principle is related to student autonomy in the learning process. As CBE is learner-centered, students are expected to assume greater responsibility for, and take charge of, their own learning without abandoning the teacher's role in directing and monitoring the learning process.
8. *The study program is flexible.* Flexibility allows students to progress as they demonstrate mastery of academic content, regardless of time, place, or pace of learning. Students are different in their pace of learning, and so the program needs to be adjusted considering the characteristics of the learners. Learners should continue learning until the competence standards are met.
9. *The guidance is adjusted to the learning needs of the students.* Learners should be guided in their development from novices to masters in a complex domain. Students need to receive rapid, differentiated support and direction based on their individual learning needs and pace, in which feedback from teachers and peers plays a large role.
10. *In the study program, attention is paid to learning, career and citizenship competences.* The educational programs should foster lifelong and life-wide learning skills such as learning how to learn, self-evaluation and reflection, collaborating and problem solving, to prepare them to handle future professional and life challenges in their career after college. Skills and competences that foster students' abilities to learn, manage their future career development and actively engage in community life need to be part of the CBE programs.

In applying these principles, teachers get the opportunity to conceptually understand the basic tenets of CBE and the associated learning environments, to know their new roles in the process, and to learn, design and apply appropriate teaching-learning methods. The principles

also help teachers reflect on their activities and beliefs (Sturing et al., 2011). In the following section, the extent to which TVET programs are competence-based is explained in light of the CBE principles.

4.2.3 CBET program and graduates' job performance

Several factors affect employee job performance in the workplace (Tutu & Constantin, 2012), including capability (job competencies), work and organizational conditions, family conditions, and financial and social factors (Cooke & Meyer, 2009; Liao & Chuang, 2004; Saeed et al., 2013). Here the relationship between the following four factors was examined: capability (job competencies), job characteristics, organizational and social factors (as independent variables), and graduates' job performance (as a dependent variable). Two central variables – education and training (independent variable) and TVET graduates' job performance (dependent variable) – are examined in this chapter to see whether there is a relationship between them or not. The other factors – job, organizational and social factors – are included as independent variables for comparative purposes.

Capability (competences) – competence developed through education and training is one of the factors that influences job performance. Tutu and Constantin (2012) argued that competencies are important prerequisites of job performance. In this study, TVET graduates' perceived level of competence achieved in their respective CBET programs are expressed using measures for job competencies.

Job characteristics – Khaya (2007) stated that job characteristics such as job type, job level, and job context influence employee job performance. As Pavin and Kabir (2011) pointed out, the work environment impacts job satisfaction, which prompts the employee to exert effort to increase work performance. In this study, whether TVET graduates were assigned a job related to their specialization and how they perceived the working conditions such as the availability and suitability of facilities were included to measure job characteristics.

Organizational factors greatly affect job satisfaction which, in turn, influences job performance (Parvin & Kabir, 2011). Leblebici (2012) stated that workplace environment is a factor for accepting and/or staying in a job. The important organizational factors are: management support and feedback, salary/wages and benefits, fairness of the promotion system and working conditions (Kim & Jogaratnam, 2010). In this study, TVET graduates'

perception of the salary they were paid, promotion conditions, management support and working conditions were included as measures of organizational factors.

Social factor – one of the challenges faced by TVET in less-developed countries is the negative public attitude to and perception of TVET (Amedorme & Fiagbe, 2013). The belief that TVET is for low academic achievers, accompanied by the low academic requirements for admission to TVET, has greatly impacted the attractiveness of TVET in Africa (Afeti, 2006). Social factors such as family conditions also influence work. According to Beauregard and Henry (2009), workplace demands may not align with family demands because pressures from one role interfere with fulfilling the requirements of the other. In this study, the perception of society and the family with regards to TVET and family responsibility were included as measures of social factors.

Job performance is viewed as how well employees execute job activities relevant to organizational objectives (Tutu & Constantin, 2012) as set and measured by a supervisor or organization against acceptable standards through the efficient use of resources (Thao & Hwang, 2010). According to Milliman et al. (2008), how employees feel about the work they are doing and the results received from that work directly impact job performance. In this study, job performance is measured by graduates' judgement of their performance in employment considering their competence level.

Job supervisors' evaluation of employed graduates' job performance – in the organizational context, employees work under supervision. Thus, supervisors' support is crucial to motivate employees and improve self-confidence and this helps employees to perform better (Leblebici, 2012). Employment evaluations include the perceptions of both employees and the employers (Bennett et al., 2009). Among the duties of job supervisors is to review employees' job performance through performance appraisals at a given time depending on the organizational context, and supervisors' reviews of performance influence employee-related decisions such as promotions, pay increases, and retention (Boice & Kleiner, 1997). In this study, job supervisors were involved to reflect on TVET graduates' job performance.

Applying the CBET model to evaluate the 'competentiveness' of TVET programs and to examine the influence of various factors on the job performance of employed CBET graduates, the goals of this study are: to contribute to the scientific literature on competence development by providing insight into the realization of CBVE, and to examine whether

CBVE programs influence graduate job performance. The research questions guiding the study are:

1. To what extent are the principles of CBET implemented in TVET programs?
2. To what extent does the ‘competentiveness’ of a program influence the performance of the graduates in employment?

4.3 Method

This study applies a quantitative approach appropriate for describing trends, attitudes, and perceptions quantitatively (Cresswel, 2003) and standardizes responses, enabling comparison between perceptions of different groups concerning a certain issue (Wesselink, 2010). This research approach is also appropriate for establishing associations between two or more variables (Hopkins, 2000).

4.3.1 Context and participants

The research was conducted at polytechnic TVET colleges in the Addis Ababa administrative region that have been promoted from college level to polytechnic status mainly based on the relative qualifications of the teaching staff and resource endowment. Four of the six government polytechnic TVET colleges in the region were selected for this study. The selected polytechnic colleges have large numbers of teachers and students and provide a range of programs at all levels of training compared to the other non-polytechnic TVET colleges. This makes it possible to contact students attending training from level III to level V because level V training is only provided in polytechnic colleges. The polytechnic colleges have been providing training for many years and are equipped with better training resources than other TVET colleges and institutions in the region. Data were collected with the permission of the respective college administrations.

Participants included TVET teachers, students, employed TVET graduates, and job supervisors. Teachers who were willing to participate were approached through training coordinators in the TVET colleges. A total of 160 questionnaires were distributed to TVET teachers in the four polytechnic colleges, of which 126 (79%) were returned. However, 13 questionnaires were discarded from the study because the questionnaires were either incomplete or filled in inaccurately. Students who were available in the colleges during data collection periods and volunteered to participate were asked by teachers assigned for data

collection purposes to fill in the questionnaire. TVET graduate employees and job supervisors were approached through employees working in the organizations recruited for data collection purposes. The participants were 113 TVET teachers, 353 students, 87 employed graduates, and 20 job supervisors.

Most of the teachers (78%), students (58%), graduates (76%) and job supervisors (100%) were male. About 68% of the teacher participants had over six years of teaching experience in competence-based programs. Most of the teachers (78%) provided training at all TVET training levels; 74% were first degree holders and 21% were Master's degree holders. Teacher, student and graduate participants came from both soft skill occupations such as business and hotel/tourism and hard skill occupations such as construction, automotive, electrical, manufacturing and information technology. All the supervisors had supervisory experience of more than five years with academic qualifications ranging from a two-year college diploma to a Master's degree.

4.3.3 Instruments

Based on the comprehensive CBVE model, statements reflecting the CBET principles were developed as a basis to measure the realization of CBET in the TVET programs. The participants (teachers, students, and employed TVET graduates) rated the statements in questionnaires using a six-point Likert-type scale with response categories ranging from strongly disagree=1 to strongly agree=6 (scale is the same for all tables). Three separate questionnaires were prepared for teachers, students and employed graduates. In this study, CBE realization was examined using ten CBE principles. The self-reflection and self-steering principles were combined because they are very much related to each other. The principle on professional core problems could be addressed through the qualification principle because the qualification profile principle is a reflection of the principle of professional core problems.

The teacher, student and graduate questionnaires had separate sections for each of the eight CBET principles, with statements that are believed to measure the aspects of a particular principle. The statements on the aspects of the CBE principles are the same for teachers, students and graduates. For example, questionnaire items such as "The graduate (qualification) profile fully reflects the critical competences of my area of training" and "In my area of training, knowledge, skills and attitudes are taught (learned) separately" were included to measure qualification profile and knowledge, skill and attitude integration principles respectively. Questionnaire items such as "Assessment includes students

demonstrating competence through performance” and “Learning activities are determined by discussion/negotiation with students” were included to measure assessment and learning activity principles respectively.

The graduate questionnaire includes open-ended questions such as “What do you want to be in the future?” and “In what career development activities are you engaged for your career scheme?” The purpose of the open-ended items was to have an overview of what graduates were doing towards their future career development after employment. The employed graduates questionnaire also incorporated statements on factors that influence their job performance, focusing on the influence of education and training. Compiled from the literature (Khaya, 2007; Kim & Jogaratnam, 2010; Pavin & Kabir, 2011; Saeed et al., 2013), four factors (independent variables) believed to influence employees’ job performance (dependent variable) were examined for this study.

- Education and training (measured by eight items) includes items such as “I got the appropriate practical experience in the college” and “I sufficiently developed the skill to work with others in teams”.
- Job conditions: measured by seven items such as “The job I am assigned is related to my specialization” and “The work environment is suitable for applying my competence”.
- Organizational conditions measured by seven items such as “Management support and encouragement is motivating” and “My salary is commensurate with my level of competence”.
- Social factors include three items such as “The perception of my community towards TVET is favorable” and “Family responsibility has made me late for work”.
- Graduate job performance (dependent variable) was measured by nine items such as “I complete my work on time” and “I am satisfied by my accomplishments on the job”.

The questionnaire for job supervisors consisted of three main parts: graduates’ job placement (4 listed alternatives), possible competence-related gaps observed in graduates (12 listed items), and job supervisors’ ratings of employed graduates’ performance. Job supervisors’ ratings of graduates’ job performance consists of seven items such as “Graduates complete tasks on time” and “We are satisfied with their job accomplishments”. These are the same as the questions for the employed TVET graduates but expressed differently.

4.3.4 Data analysis

First we tested the reliability of items using Cronbach's alpha to measure the internal consistency of the scale. Most of the values of Cronbach's alpha were above 0.7, except a few items which were $> 0.6 < 0.7$. Following the suggestion of George and Mallery (2003), Cronbach's alpha values of less than 0.6 were excluded from the ANOVA analysis. Second, mean and standard deviation were used to summarize and describe the teachers', students' and graduates' responses on the realization of the principles of CBET (Table 4.1). Third, ANOVA and post hoc Tukey tests were performed to find out whether the observations of teachers, students and graduates on CBET principles were significantly different from one another (see Table 4.2). The average of the measurement scale (3.5) was taken as a threshold for rating the realization level of CBET and comparing the ratings of graduates and job supervisors. A one-way ANOVA was also conducted to see if there was a statistically significant difference between employed TVET graduates' and job supervisors' ratings of graduate job performance. A Spearman's Rank Correlation (r_s) was run to examine the relationship between the various factors and the job performance of employed TVET graduates (Table 4.7).

4.4 Results of the study

This section of the study presents the results of research question one on the extent to which TVET in Ethiopia is competence-based, and research question two on whether competence-based education and training influence the job performance of employed TVET graduates.

4.4.1 Level of 'competentiveness' of TVET

The descriptive analysis showed that teachers observed the presence of all principles higher than students, with the exception of the flexibility principle, which both rated as average (see Table 4.1). The principle rated highest by teachers was the principle of student assessment and the least rated was the flexibility principle. For students, the highest rated principle was graduate qualification whereas the least rated was the career and citizenship principle. For graduates, the highest rated principle was learning activities, and the least rated was the career and citizenship principle. Teachers rated student assessment higher than students and graduates, showing a significant difference. For the principle of career and citizenship skills, the teachers' rating was higher than that of students and graduates.

Table 4.1. Descriptive responses on the realization of the principles of CBET (N=number of respondents (543), M=mean; SD=standard deviation; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6)).

CBE principles	Respondents	N	M	SD	Aggregated	
					M	SD
Qualification profile	Students	347	3.92	1.21	3.99	1.11
	Teachers	111	3.96	0.93		
	Graduates	85	4.35	0.80		
Knowledge, skills and attitude (KSA) integration	Students	347	3.52	1.04	3.53	0.98
	Teachers	111	3.66	0.88		
	Graduates	85	3.36	0.79		
Learning activities	Students	347	3.91	1.14	4.00	1.04
	Teachers	111	3.96	0.80		
	Graduates	85	4.40	0.79		
Student assessment	Students	347	3.63	1.27	3.78	1.18
	Teachers	111	4.35	0.91		
	Graduates	85	3.65	0.85		
Self-reflection/self-steering	Students	347	3.78	1.21	3.71	1.09
	Teachers	111	3.76	0.82		
	Graduates	85	3.36	0.78		
Flexibility	Students	347	3.56	1.15	3.58	1.05
	Teachers	111	3.55	0.89		
	Graduates	85	3.72	0.78		
Student guidance	Students	347	3.82	1.43	3.89	1.27
	Teachers	111	3.92	1.00		
	Graduates	85	4.15	0.78		
Career and citizenship	Students	347	3.52	1.42	3.53	1.29
	Teachers	111	3.90	0.94		
	Graduates	85	3.08	0.90		
Aggregate mean of all principles					3.75	1.12

The students' rating on the self-reflection/self-steering principle was more or less similar to the teachers' rating, but the graduates' rating was below average. The graduates' rating of the principle of flexibility was modestly higher than the teachers' and students' ratings.

To sum up using the aggregate mean for each principle, teachers, students and graduates rated the learning activities and qualification profile relatively higher than the other principles, followed by the student guidance principle. The knowledge, skill and attitude integration principle and the career and citizenship skill principle were the least realized principles. Considering the scales' average score (3.5) as the threshold for comparison, the collective ratings of the three categories of participants for each principle fall in the range of 3.50–4.00 mean scores. The aggregated mean score for all principles showed that the overall perception of the three groups concerning the realization of all principles in the TVET system is modestly above average.

The ANOVA results (Table 4.2) showed that there were significant differences between teachers', students' and graduates' ratings of the realization of five CBET principles – qualification profile, learning activities, student assessment, self-reflection/self-steering and career development. No significant difference among teachers, students and graduates was observed in three principles – knowledge, skill and attitude integration, flexibility, and student

guidance. The difference between students' and graduates' mean scores, and graduates' and teachers' mean scores for the qualification profile principle were statistically significant, though the difference was very small. No significant difference was observed between teachers' and students' mean scores on the qualification profile principle.

Table 4.2. Differences in perception of TVET students, teachers and employed graduates regarding the 'competitiveness' of TVET programs based on the CBE principle (N=543).

Dependent variable**	(I) Respondents	(J) Respondents	Mean difference(I-J)	Std. Error	Sig.	F	Eta squared
Qualification profile	Students	Teachers	-.03	.12	.947	5.37	0.02
		Graduates	-.43*	.13	.003		
	Teachers	Students	.03	.12	.947		
		Graduates	-.39*	.15	.035		
	Graduates	Students	.43*	.13	.003		
		Teachers	.39*	.15	.035		
Learning activities	Students	Teachers	-.04	.11	.907	7.79	0.03
		Graduates	-.49*	.12	.000		
	Teachers	Students	.04	.11	.907		
		Graduates	-.44*	.15	.009		
	Graduates	Students	.49*	.12	.000		
		Teachers	.44*	.15	.009		
Student assessment	Students	Teachers	-.72*	.12	.000	17.17	0.06
		Graduates	-.02	.13	.980		
	Teachers	Students	.72*	.12	.000		
		Graduates	.69*	.16	.000		
	Graduates	Students	.02	.13	.980		
		Teachers	-.69*	.16	.000		
Self-reflection/self-steering	Students	Teachers	.01	.11	.992	5.12	0.02
		Graduates	.41*	.13	.005		
	Teachers	Students	-.01	.11	.992		
		Graduates	.39*	.15	.030		
	Graduates	Students	-.41*	.13	.005		
		Teachers	-.39*	.15	.030		
Career development and citizenship	Students	Teachers	-.38*	.13	.016	10.07	0.03
		Graduates	.43*	.15	.013		
	Teachers	Students	.38*	.13	.016		
		Graduates	.82*	.18	.000		
	Graduates	Students	-.43*	.15	.013		
		Teachers	-.82*	.18	.000		

*The mean difference is significant at the 0.05 level

** see Annex 1 on page 92 how the CBE principles were operationalized

For learning activities, there was a significant difference between students' and graduates' and graduates' and teachers' mean scores, although the difference is small. No significant difference was observed between teachers' and students' mean scores; the ratings were more or less similar. For the principle of student assessment, the difference between students' and teachers' mean scores, and teachers' and graduates' mean scores, was statistically significant. For the career and citizenship principle, significant differences were observed between the mean scores of students and teachers, students and graduates, and teachers and graduates, although the differences were very small.

4.4.2 CBET and employed graduates' performance

The descriptive analysis showed that TVET employed graduates' rating of the extent to which the college's education and training process has developed their overall competence was slightly above the middle of the scale value (3.5) (see the average of means in Table 4.3 below).

Table 4.3. Perceptions of the outcomes of the competence-based TVET programs by employed TVET graduates who received the national certificate of competence (COC) (N=87; Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=somewhat agree; 5=agree and 6=strongly agree; M=mean; SD=standard deviation).

No.	Items	M	SD
1	Sufficiently developed competence appropriate to my specialization	4.18	1.02
2	Sufficiently developed communication skills	4.15	0.92
3	I feel confident because of my education and training	4.20	0.85
4	Got relevant theoretical knowledge from the training	4.06	0.85
5	Sufficiently developed the skill to work with others in a team	4.05	1.14
6	Got appropriate practical experience at college	3.91	1.27
7	Sufficiently developed the skill to work in diversified work settings	3.76	1.07
8	Sufficient practical experience from the cooperative training	3.74	0.87
9	I was prepared for lifelong learning	3.62	1.07
Average of means and standard deviation of all items		3.96	1.00

This result of Table 4.3 corresponded to the graduates' overall ratings of the realization of CBET principles, which was modestly above the middle of the scale value (see the average of means in Table 4.1). Employed TVET graduates rated the statement "I feel confident because I developed competencies sufficiently" higher than the others. The statement "I was prepared for lifelong learning" was the lowest rated item, more or less reflecting the graduates' ratings for the career development principle in Table 4.1. The graduates' ratings of the statements "sufficiently developed competence..." and "I feel confident..." were similar; ratings for both were moderately above the middle of the scale value, indicating the graduates' positive feeling towards their self-efficacy.

Table 4.4 below presents the ratings of employed TVET graduates regarding job factors in relation to their job performance. The descriptive analysis results in Table 4.4 show that employed TVET graduates rated all job factors moderately above the middle of the scale value (3.5), though variation among items was observed. Graduates rated assignment according to their specialization and assignment on challenging jobs higher than all the other items. Overall, the ratings on the job factors suggest that TVET graduates perceived that they performed in favorable job environments.

Table 4.4. Perceptions of employed TVET graduates on job factors (N=87; Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=somewhat agree; 5=agree and 6=strongly agree; M=mean; SD=standard deviation).

No	Items	M	SD
1	The job I am assigned is related to my specialization	5.05	0.82
2	The job I am assigned is challenging and uses the talents I developed	5.01	0.86
3	The tools I use in performing the task are appropriate for my job	4.29	0.76
4	My tasks are those that are stated in my job description	4.51	0.83
5	The organizational conditions that help me to be productive are fulfilled	3.71	0.91
6	The work environment is suitable for applying my competencies	4.03	0.61

Table 4.5 below presents the ratings of employed TVET graduates for organizational factors that are considered to influence their job performance.

Table 4.5. Perceptions of the employed TVET graduate of organizational factors (N=85; Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=somewhat agree; 5=agree and 6=strongly agree; M=mean; SD=standard deviation).

No.	Item	M	SD
1	I got sufficient support and motivation from my supervisors	4.53	0.99
2	I got relevant and constructive feedback from my supervisors	4.46	0.81
3	Employee job placement is based on capability	3.96	0.77
4	The incentive scheme related to my job is good	3.38	1.21
5	There is appropriate support between colleagues	4.67	0.69
6	There are ample career development opportunities for my future growth	3.49	1.04
7	I am paid a salary commensurate with my competence	3.02	0.98

The descriptive analysis in Table 4.5 above shows that TVET graduates perceived organizational conditions such as support and feedback from supervisors, job placement, and support from colleagues as favorable for their job performance. However, the incentive schemes, opportunities for career development and salary paid were rated below the scale middle value, indicating the graduates' dissatisfaction in these cases.

Table 4.6 below presents the ratings of employed TVET graduates for social factors as a factor that influences their job performance.

Table 4.6. Perceptions of the employed TVET graduates of social factors on graduate performance (N=85; Scale: 1=strongly disagree; 2=disagree 3=somewhat disagree; 4=somewhat agree; 5=agree and 6=strongly agree; M=mean; SD=standard deviation).

No.	Item	M	SD
1	Society's view towards TVET is positive, so I am proud to be a TVET graduate	4.40	1.14
2	My family responsibility takes much of my time so I am late for work	3.53	1.32
3	Friends and family view TVET as positive so happy to talk to them about work	4.49	1.06

As can be seen from Table 4.6 above, the TVET graduates perceived that the outlook of their family and friends towards TVET was favorable, suggesting that these factors did not have a negative influence on their job performance. A Spearman's Rank Correlation (r_s) test (Table

4.7 below) showed that education and training, job, organizational and social factors positively influence graduates' job performance in employment, though the degree of positive influence varies among the factors.

Table 4.7. Correlation results on the degree of influence of education and training, job, organizational and social factors on job performance (N varies between 80 and 81 because of partial non-response; Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=somewhat agree; 5=agree and 6=strongly agree; M=mean; SD=standard deviation).

	M	SD	1	2	3	4	5
1. Education/training	3.96	0.72	1				
2. Job	4.22	0.43	.45**	1			
3. Organizational	3.93	0.54	.35**	.09	1		
4. Social	4.14	0.93	.34**	.36**	.23*	1	
5. Job performance	4.57	0.57	.61**	.58**	.42**	.60**	1

**correlation is significant at the 0.01 level (two-tailed)

*correlation is significant at the 0.05 level (two-tailed)

A strong positive correlation was observed between education/training (measure of competence) and employed TVET graduates' job performance ($r_s = .61$, $N=80$, $p < .01$); between job factors and job performance ($r_s = .58$, $N=80$, $p < .01$); between organizational factors and graduate job performance ($r_s = .42$, $N=80$, $p < .01$), and between social factors and graduate performance ($r_s = .60$, $N=81$, $p < .01$).

The strong and positive correlation between education and training and graduate job performance suggests that if the level of job competencies increases, job performance seems to do better as well. Moreover, job, organizational and social conditions were positively related to job performance, indicating that the more these conditions are perceived favorably, the better will be the employees' job performance.

Table 4.8. Perceptions of the employed TVET graduate on their job performance (N=85; Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=somewhat agree; 5=agree and 6=strongly agree; M=mean; SD=standard deviation).

No.	Item	M	SD
1	Most of the time I complete my work on time	5.06	0.83
2	Most of the time I complete my job with the required quality	4.81	0.93
3	I perform my work with confidence and relaxation	4.67	0.76
4	I am successful in group work	4.72	0.73
5	Most of the time I complete work more than the target set	4.09	1.11
6	I am happy in my job accomplishments	4.59	0.69
7	I usually do not require support from others when performing my job	3.94	0.96
8	I efficiently use the resources provided to me to perform my job	5.16	0.94
Average of means and standard deviation of all items		4.63	0.86

Table 4.9 below shows the ratings of job supervisors of employed TVET graduates regarding the graduates' job performance. The job supervisors rated most of the items on TVET

graduates' job performance above the middle of the scale value, suggesting that the supervisors were positive about the overall performance of the graduates.

Table 4.9. Description of job supervisors on graduate performance (N=20; Scale: 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=somewhat agree; 5=agree and 6=strongly agree; M=mean; SD=standard deviation).

No.	Item	M	SD
1	Graduates usually complete work on time	4.20	0.95
2	Graduates usually complete work at the required quality	3.95	1.09
3	Graduates perform work with confidence and relaxation	3.50	0.94
4	Graduates are successful in group work	4.05	0.75
5	Graduates usually complete work more than the target set	2.95	1.19
6	We are happy with the graduates' accomplishments	4.00	1.02
7	Graduates do not require support from others when performing job	3.30	0.97
8	Graduates efficiently use resources when performing job	4.45	0.82
Average of means and standard deviation of all items		3.80	0.81

The job supervisors' rating of item 5 was below the middle of the scale value (3.5), indicating that graduates did not perform above the target set, contrary to the graduates' rating of the same item (see Table 4.8, item 2). The rating of the job supervisors on item 7 suggests that the TVET graduates they supervised usually required support, which was contrary to the responses given by the TVET graduates on the same item (see Table 4.8, item 7).

An ANOVA test was conducted to see whether there was a difference between the responses of employed TVET graduates and job supervisors on the graduates' job performance. The result showed a statistically significant difference between the graduates' and job supervisors' evaluation of graduate job performance, ($F[104]=24.59$, $p<0.05$). The descriptive analysis of the same showed that the graduates overestimated their job performance ($M=4.57$, $SD=0.86$) compared to supervisor's ratings of the graduates' performance ($M=3.80$, $SD=0.81$). Despite the difference between the two, both rated graduate job performance above the middle of the scale value (3.5), suggesting that it was more or less satisfactory.

The job supervisors were also asked on the same questionnaire to indicate what graduates possibly lack when performing the job which could be linked to the level of graduate competence. Accordingly, the most cited deficiencies from higher to lower rankings were: unable to adapt to working environment quickly, lack of self-confidence, lack of relevant work experience and lack of knowledge and skills. Regarding graduates' future career development, about 95% of the graduates stated that they are engaged in improving their current qualification level with the ambition of increasing their earnings and joining

university in the future. As they responded, they have already started studying to promote themselves to the next qualification level in their respective specializations.

4.5 Discussion and conclusion

4.5.1 Discussion

The result of the first research question shows that competence-based TVET appears to perform relatively well on the principle of qualification profile and learning activities compared to the other CBET principles. The least realized CBE principles are knowledge, skill and attitude (KSA) integration and career and citizenship, though the overall rating of these principles was average. It appears that the instructional situations in TVET colleges are not conducive to fostering KSA integration and creating an opportunity to practice and demonstrate this integration in the learning process. Without KSA integration in practice, a program cannot be called competence-based because it is this integration that defines competence (Wesselink, 2010). Professional competence presumes that the application and measurement of the three are united in vocational practice when performing a professional task (Baartman, 2011). As competence is the proven ability to use knowledge, skills and attitude in a context to achieve results (Ravotto, 2011), knowing what to perform (knowledge, facts, etc.), and how to do something before doing it (possessed skill), and recognizing the task as valuable (attitude) precedes performing a task – a “prerequisite for adequate functioning on the job” (Baartman, 2011, p.127). In the learning process, teachers are supposed to show the relationship between knowledge, skills and attitudes so that understanding develops as a meaningful whole (Baartman, 2011). The practical application of knowledge, skills and attitudes in the learning process by creating situations that allow students to operate and interact to produce observable results (Fulantelli & Oprea, 2011) is crucial in competence development. If that is not the case, students will find it difficult to work in a professional setting because professional practice requires the application of KSA together (integrated practice), not in isolation. Weak KSA integration also means that students miss the link between theory (knowledge) and practice (application), which is crucial in professional practice. Thus, KSA integration needs to be well spelt out and clearly articulated in occupational standards, curriculums and teacher-made teaching and learning materials, especially in the qualification profile along with the competencies.

As the findings for research question one show, the assessment principle was rated positively, showing that it is practiced in the TVET system. Nevertheless, it could not be considered to

have a high level of realization (slightly above average rating) when seen in the light of its crucial role in competence-based TVET. In CBVE, students are expected to complete an assessment that verifies that all competencies are developed and can be applied in the workplace context. This takes place through a variety of assessment methods (Department of Training and Workforce Development, 2012). The assessment involves demonstrating competence in a professional practice situation, in other words proof of competence is gathered by having learners perform authentic tasks regularly, depending on the context (Gulikers et al., 2004; Sluijsmans et al., 2008). Seen in the light of the students' and graduates' ratings, the assessment practice in TVET colleges appears to either lack alignment with professional practice or be less emphasized when practiced in the colleges. This might be linked with various factors related to teacher and student motivation, the availability of materials/facilities for practical assessment, class size and the overall training environment. It is an indication that assessment practice in TVET colleges appears to lack the ability to measure workplace competences.

The result of the first research question further shows that students lacked sufficient opportunities to learn from their personal experiences through self-reflection and self-direction. It appears that students were not provided with opportunities to assess their progress and to develop experiences through personal initiatives to work by themselves. Thus, students seem to be dependent on teachers. This might be linked to teacher motivation, past experience with traditional teaching methodologies, and lack of student readiness to take responsibility mainly because students expect the same from the teachers as they were used to in high schools. Teachers need to be aware that self-reflection expands and deepens learning experiences (Philip, 2006; Wesselink, 2010), leading students towards understanding (Hinett, 2002).

With the follow up and support of TVET teachers, self-reflection/self-steering activities serve as a feedback mechanism and stimulate learners to determine the direction of their own learning (De Bruijn & Leeman, 2011; Thanasoulas, 2000). TVET teachers can foster self-reflection/self-steering by creating supportive classroom situations that enable students to design and express their goals, express what they have learned and the problems they encountered, take self-initiative and become co-decision makers in the learning process by designing tasks consistent with the students' personal goals and interests (McCombs, 2006; Stefanou et al., 2004). Fostering self-direction in learning skills such as planning for learning, monitoring the process, evaluating results and reflecting on the attainment of goals is vital for

both current learning and future career success (Breed, 2013). As self-awareness and self-direction are critical especially for self-employment, TVET teachers should foster them with appropriate instructional support and time for students' self-steered inquiry (Desautel, 2009).

As the result of research question one shows, the principle of career development and citizenship is among the least realized of the CBE principles. Seen in the light of the students' and graduates' ratings of this principle, it appears that developing knowledge, skills and attitudes essential for lifelong learning was not given much attention. It should be born in mind that career and citizenship competencies such as communication skills, learning how to learn, problem solving, self-inquiry and anticipatory learning skills are essential to build the capacity to work in a dynamic and complex workplace situation and to "survive in modern society" (Medel-Anonuevo, Ohsako & Mauch, 2001).

The results of research question two show that the employed TVET graduates felt that they were sufficiently prepared to start work because they had developed the competences and personal confidence required from their training programs. The job supervisors' positive rating of graduates' job performance (moderately above average) confirms the capability of the graduates to work in the job market, though the supervisors rated graduate job performance lower than the graduates' rating. This signals that a positive relationship exists between graduates' level of competence and graduates' job performance in the workplace. This means that, had the realization of competence-based programs been higher than the current level, the performance of the graduates in the workplace in a positively perceived working environment would have been better too. The result supports the assumption that CBVE has the potential to reduce the gap between the labor market and education (Biemans et al., 2004). From the job supervisors' perspective, the colleges' competence development process did not help graduates develop a strong belief in their capability. Such strong beliefs on self-efficacy are important in enhancing job performance as "the types of outcomes people anticipate depend largely on their judgments of how well they will be able to perform in given situations" (Zimmerman, 2000, citing Bandura, 1986, p.392).

In summary, the effort that has been made so far to realize competence-based TVET is encouraging given the stringent constraints such as lack of training facilities, weak school-industry linkage, and the newness and complexity of implementing the competence-based innovation. Much has to be done to make the TVET programs more competence-based in practice. Building learning environments that promote competence development, and

monitoring progress by involving teachers, students and graduates to improve the ‘competentiveness’ of programs through constructive interventions, are critical for competence development and for realizing the contribution of investing in competence-based TVET.

4.4.2 Conclusion

The results of this study show that CBVE is being practiced in the TVET system in Ethiopia. Although the application of the CBVE principles was observed, the competence-based curriculum implementation in TVET colleges lacks strength regarding the practical dimension of CBVE. Considering the scale’s average ($M=3.5$) as a threshold for a partial competence-based CBVE model, TVET in practice seem to fall somewhere between “partially competence-based” and “largely competence-based” levels of CBE realization. The results also indicate that there is a relation between the ‘competentiveness’ of a TVET program and graduates’ job performance in a working environment in which job, organizational and social factors were positively perceived. The job supervisors’ positive rating of the graduates’ job performance ($M=3.80$, which is above the scale’s average) shows that the overall rating of graduates’ performance in the labor market appears to be satisfactory. As well as continuous follow up, it is also important – to ensure the quality of TVET – to conduct a periodic evaluation of how competence-based TVET is practiced in the light of the CBE principles using the CVBE model, by involving teachers, students, graduates and labor market practitioners.

4.4.3 Limitations and implication for research and practice

Although this study has shown the extent to which competence-based TVET has been realized in the light of competence-based principles, it is not without limitations. The study was based on perceptions of respondents (personal opinions) which were measured quantitatively, making it difficult to control personal and other factors that influence the way respondents perceive situations. Although TVET teachers, students and graduates are the main players in realizing educational goals, including the administration point of view on CBET realization would have been an additional input to obtain a complete picture of the teaching-learning environment in TVET colleges. Using this study as a background, future research needs to be carried out on the same issue with the involvement of teachers, students and administrators supported by qualitative data from direct interviews and document analysis.

The study signaled a positive correlation between CBET and employed graduates' job performance as judged (perceived) by graduates and their respective job supervisors. Thus, the study is based on perceptual data collected through a questionnaire from a small sample, which is another limitation of this study. The study also did not clearly determine the extent to which each factor contributed towards job performance and did not distinctly show the effect of competence-based training on job performance. Therefore, future research should determine the extent to which CBET could influence (predict) job performance in comparison with other variables, through multiple regression analysis using a sufficiently large sample supported by interviews and on-the-job observation.

The findings of this study contributes towards improving the implementation of competence-based TVET. As competence-based education and training is new to the Ethiopian TVET system, the results of this study can help teachers to be more aware of the various requirements of competence-based education and training. TVET teachers could also develop insight on their different roles in competence-based curriculum development, instruction and assessment. The results of this study can also help teachers in self-reflection on their own teaching and assessment strategies and practices in light of the CBE principles to see the extent to which those strategies were appropriate for competence development. Such analysis of teachers' own teaching practices based on the CBE principles may guide TVET teachers to redesign better instructional strategies and learning experiences that help students develop the required competences to the standard level. For example, in terms of KSA integration, teachers, while teaching can demonstrate the KSA integration in different situations such as classroom exercises, assignments, hands-on simulations and projects in schools and during internships in workplaces. Teachers, while guiding students in their learning processes, could also engage in continuous follow-up the students' integrative application of KSA. This could be done through working with students, critical reflection on students' work and giving continuous timely feedback. This, in turn, helps teachers gradually dissociate themselves from the traditional transitive delivery approaches.

The results of this study will also help TVET administrators and training coordinators for effective monitoring of the competence-based TVET. The results of this study showed the strengths and area of improvement in implementing competence-based TVET system. Based on these results, TVET administrators and program coordinators could design appropriate mechanisms of monitoring and follow up of school and workplace practices developed in light of the competence-based principles. For example, TVET administrators can develop a

supervision plan to follow up how teachers conduct instruction, the quality [relevance] of the learning activities, assessment and feedback mechanisms. The CBVE model could also serve TVET management as a tool of evaluating the TVET curriculum in terms of its relevance, teachers instructional competencies and measuring implementation effectiveness directed towards improving the overall performance of the TVET system.

The results of this study will also be instrumental to TVET administrators and coordinators to solicit feedback on job performance of employed graduates of the TVET system to improve the training system. For examples, employed TVET graduates may be called to TVET institutions or fill questionnaires to reflect on their training in relation to their experience in employment. This helps to identify shortcomings in the training process, areas of improvement, new competencies to be incorporated so that the TVET programs are aligned with workplace requirements. Such evaluative feedback from employed TVET graduates supported by workplace practice analysis is helpful to improve TVET curriculum content, practices and instructional processes.

Annex 1

How CBE principles are operationalized in the questionnaire designed for TVET teachers, students and graduates

3.1. The qualification (graduate) profile of TVET graduates

1. I know the graduate/qualification profile of TVET graduates of my area of training.
2. In my training program, the graduate profile reflects the core tasks of the job/occupation.
3. The graduate profile indicates critical competences of the students' future jobs.
4. The curriculum my program is designed based on the critical competences of the job/occupation
5. In my training program, students are engaged on the critical professional practices of the occupation

3.2. Learning activities take place in different, concrete and meaningful vocational situations

1. In my training, classroom learning is more dominant than learning in practice in most of the times.
2. My training always involve a link between classroom learning and practical experience.
3. The practical learning settings/conditions fully reflect the professional practice settings in the labour market.
4. In my area of training, students involve both in individual and team work in school and outside school.
5. In my training program, learning activities are determined with the discussion/negotiation with students.

3.3. Integration of Knowledge, Skills and Attitude

1. In the module my training program, Knowledge, skill and attitudes are learned separately, not together.
2. In the module of my training program, knowledge, skill and attitudes are assessed separately, not together.
3. In the class, students often demonstrate both the theoretical aspects and application of knowledge.

3.4. Assessment practice and conditions

1. In my area of training, student assessment is continuous rather than periodic.
2. In my area, assessment usually use different (mixed) methods of assessment.
3. In my area of training, assessment include students demonstrating competence through performance.
4. In my area of training, type and time of assessment is most often adjusted to the characteristics of learners.
5. Teachers always discuss with students on their assessment results as a feedback for learning.

3.5. Students reflect on their learning and outcome

1. In my training program, students are often allowed to reflect on their learning both in and outside the classroom.
2. In my training programs, students are allowed to demonstrate what they have learned in the classroom/lab/workshop.

3.6. Students increasingly self-steer their learning

1. In my area of training, students often decide on their learning process.
2. In my area of training, students often take responsibility for their own learning.

3.7. Flexibility of the program

1. In my area of training, the program is adjusted considering the characteristics of the students.
2. In the class, students can choose among different learning activities that suit their learning styles.
3. In my area of training, students often get opportunity to learn by their own pace.
4. I know that students repeat modules until competence is achieved.
5. The emphasis in the program is on completion of the program, not competence development.

3.8. Student guidance and support

1. I offer varied guidance adjusted with the learning needs of each learner.
2. I always monitor and provide immediate feedback while and after the students learning process.
3. Students are often stimulated to cooperate and help each other in the learning process.

3.9. Learning, career and citizenship competences

1. In my department, attention is given for developing students' skill on learning how to learn.
2. In my department, training is provided in career development competences of learners.
3. In my area of training, communication, team work, tolerance, conflict resolution skills, respecting rights of others, etc are offered to students.

Chapter 5

TVET Teacher Education and TVET Teachers' Engagement in Professional Development

Abstract

TVET teacher training and teachers' professional development play a crucial role in implementing competence-based TVET. In the Ethiopian TVET system, teacher training and teachers' professional development programs are put in place to prepare teachers for the emerging competence-based TVET. This study examined how TVET teachers are trained for competence-based TVET in the light of competence-based education principles, and the professional development activities that TVET teachers are engaged in to grow professionally. Data were collected through questionnaires completed by teacher training teachers (54), teacher training students (149) from two TVET teacher education colleges, and TVET teachers (113) from four polytechnic TVET colleges in Addis Ababa. Unstructured interviews with teacher training teachers, department heads and TVET administrators were also conducted. The study results show that TVET teacher training was not aligned with the requirements of competence-based TVET. Teacher training teachers mainly employed transmissive delivery approaches dominated by lecturing, and student assessment did not focus on individual competence development. Industry-based practicums and school-based teaching for pedagogical practice were also missing, and TVET teachers' engagement in professional development was limited to traditional professional activities such as reading, workshops and seminars. Teachers' collaborative practices were rarely used; there was no systematic professional development plan at the institutional level and TVET teachers did not engage in active research. It can therefore be concluded that TVET teachers are not well-prepared for effectively handling their teaching responsibilities as competence-based TVET demands.

5.1 Introduction

Teacher training and teachers' professional development have been given due emphasis in Ethiopia as components of educational reform (Abebe, 2011; Chalchisa, 2011). The TVET strategy stipulated that highly competent, flexible and creative teachers are the backbone of a competence-based system (MOE, 2008). In light of this, teacher training programs have been undertaken to train TVET teachers capable of preparing competent graduates. Regarding teacher qualifications, the TVET strategy document (MOE, 2008) stipulated the following:

The new qualifications will be based on the professional standards of the engineering and other revised degree programs and combined with pedagogical, methodological and didactical modules; emphasizes strengthening practical competences and the appreciation of practical work among TVET teachers/instructors; frequent internships in industry during the training will be introduced (p. 38).

In CBE, the concern is why something has to be learned and how it can be applied to solve complex problems rather than what to learn (Hoogveld, Paas & Jochems, 2005). This implies that the focus of teaching in CBE is more on how the content that students learn is applied instead of understanding the content of instruction. In addition to the role of a subject expert, teachers also play a coaching role through creating learning opportunities and guiding learners in their learning and development process (Hoogveld, Paas & Jochems, 2005; Struyven & Meyst, 2010; Wesselink, 2010). In most cases, moving to these new roles and associated tasks is not easy for teachers who have worked for many years in the knowledge transmission tradition (Seezink, 2008). Teacher training is therefore required, to prepare teachers for their changing roles and the new demands in the profession. Since TVET policy in Ethiopia promotes competence-based education and training, it is expected that TVET teacher education programs will be aligned with competence-based TVET so that teachers can productively conduct their teaching duties and play their new roles. Just making TVET teacher training programs and practices competence-based, however, is not sufficient to realize competence-based TVET. TVET teachers also need to engage in continuous learning while teaching (Guskey, 2002; Runhaar, 2009).

TVET teachers' continuous learning after pre-service training is recommended because pre-service teacher training cannot provide the complete knowledge and skills required for good teaching and for dealing with the challenges that teachers may encounter in the school context (Herbert & Rainford, 2014; Runhaar, 2009). Teachers are required to fill the gap that arises from professional (workplace) dynamics and school practices through additional learning within and outside the school system (Gindole, 2013). TVET teachers therefore need to

actively engage in professional development activities using different learning routes to scale up their knowledge and skills and therefore to address new developments and situations (Gendole, 2013). It is in recognition of this that TVET teachers' professional development was considered pivotal for realizing competence-based TVET as indicated in the TVET strategy (MOE, 2008). The TVET strategy document stipulates:

Systematic training, education and further training will be provided for teachers and instructors in the TVET system at all levels in the formal programs....emphasis will be placed upon developing systematic further education and training schemes to continuously upgrade the competences of existing TVET teachers/instructors and to facilitate lifelong learning and qualification (MOE, 2008, p. 37-39).

Considering the critical role TVET teacher training and teachers' professional development play in implementing competence-based TVET, this study investigates how TVET teacher training is practiced in Ethiopia and TVET teachers' engagement in professional development in light of the competence-based TVET approach.

5.2 Theoretical framework on TVET teacher education and professional development

The need for quality in teaching and learning, the public pressure for school accountability and the pursuit of high achievement mean that policymakers, educators and researchers are giving greater attention to teacher training and teachers' professional development (Creemers, Antoniou & Kyriakides, 2013). Synthesizing research findings, Darling-Hammond (2006) stated that teachers' abilities greatly influence students' learning. Creemers, Antoniou and Kyriakides (2013) pointed out that teacher preparation and professional development fosters teachers' content knowledge and develops their teaching practices for quality learning.

The quality of the teachers plays a crucial role in students' success in schools (Asgedom et al., 2006; Goldhaber & Anthony, 2007; Rivkin, Hanushek & Kain, 2005). In this regard, initial (pre-service) teacher preparation plays a decisive role in fostering high quality education. Through teacher education, teachers develop knowledge of the subject matter and the skills to deliver that content to diverse learners, to plan and execute instruction, to construct an appropriate learning environment and to work skillfully with others (Darling-Hammond et al., 2005; Herbert & Rainford, 2014; Kleickmann et al., 2013). As such, pre-service teacher preparation provides a "solid scholarly foundation" (Pantic & Wubbels, 2010, p.701). Bronkhorst (2011) asserted that teacher training students "not only have to learn what a teacher should know, but also how to put gained knowledge into action". Thus, TVET teacher education programs should create learning environments in which teacher training students

have the opportunity to build a strong knowledge base and pedagogical content knowledge (Kleickmann et al., 2013; Pantic & Wubbels, 2010) relevant to the competence-based TVET curriculum the teachers are preparing for, and blended with workplace practices.

Competence-based TVET is concerned with producing students who competently perform job-related tasks or execute roles through the application of learned knowledge, skills and attitudes acquired in the learning processes (Maphalala, 2006). Hence, introducing competence-based TVET impacts the roles and tasks of TVET teachers (Wesselink, 2010). For example, teachers in competence-based systems are responsible for integrating classroom learning with learning in the workplace (Wesselink, 2010) and for playing multiple roles as “experts, assessors, coaches, educational developers, researchers, and managers” (Wesselink, 2010, p.63). The competence-based approach “fundamentally changes the teachers’ responsibility: facilitator, coach of learning, oriented on proficiency” (Sturgis & Patrick, 2010).

Moreover, the competence developed should be evidenced through demonstrated performance in an authentic or simulated situation (Sturing et al., 2011; Vleuten & Schuwirth, 2005). Thus, establishing the learning environment that facilitates competence development and self-regulated/self-directed learning competencies, guiding students in their learning processes, arranging conditions for students to demonstrate their competence, and providing remedial activities for those who are not successful fall mainly on the shoulders of teachers. Competence-based TVET therefore demands more planning and work from teachers. To realize these teacher roles, pre-service teacher education programs need to be aligned with TVET programs to prepare prospective teachers for the realities of the classroom (Korthagen & Kessels, 1999). Furthermore, teaching-learning in pre-service TVET teacher training programs should also incorporate school-based practice (practicum) as a method of delivery so that the prospective teachers gain first hand working experience (Kenedy, 2006). Through school-based practice, the teacher training students acquaint themselves with the challenges in workplace learning, providing them with the opportunity to gain experience and learn how to manage workplace challenges.

According to Anane (2013), CBE is more learner-centered, emphasizing the learner’s role in the learning process rather than focusing on what teachers provide for the learners. Thus, the teacher’s role is to facilitate student learning using “facilitation methods such as discussion, small group work, problems solving and research” (Anane, 2013, p.122) along with direct

instruction. As Bell and Mitchell (2000) stated, in competence-based programs “students work at their own rate and structure their own method of learning in order to meet learning objectives” (p.5). This implies that delivery methods in competence-based education involve self-directed learning strategies by engaging students in self-steered activities in which teachers monitor student activities and provide feedback (Sturing et al., 2011; Tillema, Kessels & Meijers, 2000). Thus, teachers of teacher training programs need to use instructional strategies that develop the self-direction and self-reflection skills of teacher training students. In addition to these delivery skills, teaching incorporates “*organizing* the contexts and communities of learning, *formulating* organizational objectives, *structuring* instructional contents, *guiding and monitoring* the students’ advancement through the integral cycle of investigative learning, *interacting and conducting* conversation with the students, *planning and assessing* the overall instructional process” (Attwell, 1997, p.258). These characteristics of teaching suggest that TVET teacher training students need to develop teaching competencies such as designing learning activities and instructional strategies, planning lessons, interpersonal communication skills, guidance and/or coaching, assessment and managing classrooms.

Although pre-service teacher education is an important element in a teacher’s professional profile, it is not sufficient for good teaching (Pantic & Wubbels, 2010; Somers & Sikorova, 2002). Completion of pre-service training is to be considered a stage in a teacher’s professional growth, not a terminal point because “no matter how good pre-service training for teachers is, it cannot be expected to prepare teachers for all the challenges they will face throughout their careers” (OECD, 2009, p.49). There may also be other reasons why teachers are not well prepared in pre-service teacher training colleges. In-service training programs and other professional development activities are therefore essential for improving teachers’ teaching proficiency (Bayar, 2013; OECD, 2009). Thus, teachers need to refresh and update their knowledge and skills while teaching and throughout their teaching career, through additional learning within and outside the school system. This will enable them to keep up with new technological innovations and the changing needs of students (Gendole, 2013; Kwakman, 2003; Runhaar, 2009).

High-quality professional teacher development improves teaching practice and teachers’ confidence, which could in turn translate into higher levels of student achievement (Antoniou & Kyriakides, 2012; Asgedom et al., 2006). Engaging teachers in professional development activities also boosts their future teaching careers (Seezink & Poell, 2009) because it boosts

their capacity to influence students' learning and success (Gemed, Fiorucci & Catarci, 2014). The initial teacher training programs oriented on competency-based education must also be accompanied by an upgrade of the teaching force through continuous professional development programs (Serdenciuc, 2013).

Teachers' professional development (TPD) encompasses all the processes, actions and activities in which teachers engage to expand or update their professional knowledge, skills and attitudes beyond the point of their initial training for improving student learning (Guskey, 2000; Villegas-Reimers, 2003). TPD can be offered in many ways, ranging from the formal to the informal, by experts in the form of courses, workshops, seminars, conferences or demonstrations, or through collaboration between schools or teachers across schools or within the schools in which teachers work (Fraser et al., 2014; Guskey, 2002; Khan & Khan, 2014; Richter et al., 2011). Coaching/mentoring, collaborative planning and teaching, the sharing of good practices, reflection on past experiences, experimenting, and seeking feedback are also mechanisms for fostering teachers' professional development (Guskey, 2000; Kwakman, 2003; OECD, 2009; Putnam & Borko, 2000; Richter et al., 2011; Runhaar, 2009; Seezink & Poell, 2011).

Teachers' professional development is also enhanced by engaging teachers in research activities, especially individual or collaborative action research (Gendole, 2013). Action research is an inquiry conducted by teachers with the aim of understanding and improving the quality of actions on instruction or increasing the effectiveness of the work in which teachers are engaged (Hine & Lavery, 2014). Action research provides many benefits for teachers, for example increasing teacher empowerment, linking theory and practice and self-awareness, expanding teachers' pedagogical repertoires and developing new knowledge (Brown, 2002; Hine, 2013; Leitch & Day, 2000). Through action research and reflection, teachers can improve their practice in a cycle of continuous improvement and evaluate their actions in order to change their practices as reflective practitioners (Brown, 2002; Leitch & Day, 2000).

Scholars such as Broad and Evans (2006), Cohen and Hill, (2000) and Villegas-Reimers (2003) stated that properly planned and executed professional development programs have a significant positive impact on teachers' beliefs and practices and students' learning. Asgedom et al. (2006) asserted that student achievement and teachers' professional development were positively correlated. Synthesizing various research findings, Gendole (2013) noted that teachers' engagement in professional development is instrumental to the implementation of

educational reforms because it enhances teachers' competencies and awareness and understanding of what the reform entails. Rapid changes in knowledge and workplace practices mean that teachers need to be "knowledgeable about the latest developments in their subjects, professional practices and the effects of their own educational practices to support students" (Wesselink, 2010, p.63). Schools therefore need to have a plan in place for teachers' professional learning that involves all teachers, to ensure high-quality student learning at several levels and in every subject area (Darling-Hammond, 2009; Feiman-Nemser, 2001).

Initial (pre-service) teacher training and teachers' continuous professional development which are designed and implemented considering teachers' needs and the essential elements of teachers' development are critical to improve student learning in both academic and technical-vocational education. This study addresses the following research questions.

1. To what extent are teachers prepared by means of pre-service teacher training for competence-based TVET as perceived by teacher training teachers and students?
2. What professional development activities do teachers undertake to improve their knowledge and practice for implementing competence-based TVET?

5.3 Method

In this study, a mixed research design involving both quantitative and qualitative approaches is used to better understand and investigate the research issues. The quantitative approach is used to capture the perceptions of teacher training teachers and students regarding how TVET teachers were prepared and TVET teachers' involvement in professional development activities. The qualitative approach is used to capture the reflection of department heads and administrators on TVET teachers' preparation and engagement in professional development to complement the results of the quantitative data.

5.3.1 Context and participants

This study involves two TVET teacher training colleges and four polytechnic TVET colleges in the Addis Ababa region. The TVET teacher training colleges involved are Technology Teachers Education in Adama Science and Technology University (ASTU) and Federal Technical-Training Institute (FTTI) in Addis Ababa.

The participants for *research question one* were teacher training teachers, students and department heads. These groups of participants are believed to provide appropriate

information on how the teacher training programs are run, as they are directly involved in the implementation of the programs. For *research question two*, the participants were TVET teachers and TVET program administrators as they were the ones mainly concerned with the design, practice and monitoring of teachers' professional development activities. For *study one*, 54 teacher training teachers (26 from ASTU and 28 from FTTI College) and 149 teacher training students completed the questionnaire. Of the 54 teacher training teachers, 90% were male and 76% held a Master's degree or above. About 69% had over five years of teaching experience in TVET teacher education programs. Of the 149 teacher training students, 72% were male. Teacher training students from ASTU were final year students (3rd year). FTTI students were in their 4th semester of study (one and a half years) because they were the first batch to enroll in the program. Teachers and students were from hard skill occupations such as auto mechanics, construction and electricians because there are no soft-skill teacher education programs such as business and hotel management in the teacher training colleges. Four department heads from ASTU who have served as teachers for many years were also involved. For *study two*, 113 TVET teachers, and four TVET administrators who have served as teachers and program coordinators for more than 10 years, were involved.

Interviews were conducted with four senior teachers in ASTU's TVET teacher training programs. These senior teachers were selected based on their extensive experience in teaching and administration in various curriculum settings in the teacher training colleges. Two of the senior teacher training teachers interviewed were department heads and engaged in teaching at the time of the interview, whereas the other two had served as department heads and coordinators of programs in the past and were currently engaged in teaching. Three of the interviewed senior teachers were graduates of ASTU TVET teacher training programs (BSc and MSc degrees) and had adequate experience of the different TVET teacher training programs offered at various times. The other teacher was a graduate of Technical Teacher Education of Addis Ababa University and had served as a teacher, program coordinator and head of the TVET teacher training department in ASTU housing the TVET teachers program. This teacher was also teaching pedagogical courses in the TVET teacher training programs at the time the data was collected. Since these senior teachers have a rich experience as teachers and administrators, the information they provide is assumed to fully reflect the conditions in the teacher training programs.

5.3.2 Instruments

Data were collected using questionnaires with a six-point Likert-type scale with response categories ranging from strongly disagree=1 to strongly agree=6. Three separate questionnaires were prepared for teacher training teachers, students and TVET teachers. Teacher training teachers and students rated questionnaire items developed to determine the alignment of the teacher training practices with the competence-based TVET curriculum. The questionnaire items were developed based on the CBE principles stated in Chapter 4 of this thesis. In this questionnaire, the principles on qualification profile and vocational core problems were combined and presented as “program design”, as the two principles are closely related. The statements such as “The design of the course or modules reflects the principles of competence-based education” and “The learning activities are relevant to the competencies in the course/module” were among the items on CBE principles. Teacher training students also rated statements that were similar to the questionnaire items presented to teacher training teachers on CBE principles.

The questionnaire for teacher training teachers also contained statements on problems teachers encountered while teaching and whether teacher training students sufficiently developed knowledge about competence-based principles. For example, items such as “I noticed that students have developed individual and collaborative learning skills demonstrated in classrooms/workshops” for CBE principles and “Students lack the ability to understand the subject matter” for problems encountered in teaching were included. The questionnaire for teacher training students included statements on the development of teaching competencies measured on a five-point Likert-type scale with response categories ranging from *fully developed*=5 to *not developed*=1. For example, items such as “designing syllabus and teaching strategies” and “planning lessons and learning activities” were among the teaching competencies rated. Teacher training students were also asked to rate the frequency of teacher delivery methods on a four-point rating scale with response categories ranging from *always*=4 to *not at all*=1. For example, how often teachers used problem solving, individual student demonstration, lecturing and self-reflection in their teaching were among the items rated.

A few open-ended questions were included in the questionnaires for both teacher training teachers and students to solicit information on general issues. For example, teachers were asked to reflect on their perceptions of the current student enrolment in teacher training

programs. Teacher training students were asked to reflect on how they joined the teaching profession and whether they will continue as TVET teachers after graduation.

The TVET teachers' questionnaire was about the involvement of TVET teachers in professional development activities. In this questionnaire, statements such as "I consider teacher engagement in TDP activities to be essential for the career development of teachers" and "I engage in collective reflection on my performance with my colleagues and students" were included. Four department heads who were also teachers were interviewed on the design of the TVET teacher education programs and the problems encountered in conducting the programs. The department heads, for example, were asked whether the design of the teacher education programs were in line with competence-based TVET and how teacher training students were assessed. Interviews were used instead of a questionnaire as the number of participants and interview items were small but sufficient to include the administrators' point of view.

5.3.3 Data analysis

We first tested the reliability of items using Cronbach's alpha to measure the internal consistency of the scale before analysis. All the values of Cronbach's alpha were above 0.7 and found to be acceptable for analysis (George & Mallery, 2003). Second, the mean and standard deviation were used to summarize and describe the participants' responses in both studies. Third, ANOVA analysis was performed for research question one to find out whether the observations of teacher training teachers and students on the "competentiveness" of the programs were significantly different. The average of the measurement scales ($M=3.5$ for a six-point Likert-type scale and 3.0 for a five-point Likert-type scale) were taken as a threshold for rating the participants' responses. For interview data, responses of the interviewees were written next to the questions and then common responses were identified and reported narratively. Specific responses not shared by other interviewees were presented separately.

5.4 Results

5.4.1 TVET teachers' preparation

The descriptive and ANOVA results for this part are presented below (see Table 5.1). Teacher training students rated all the items below the scale's average (3.5), indicating that the teacher training programs could not be characterized as competence-based (aggregated $M=3.32$, $SD=1.07$). Teacher training teachers observed the presence of almost all the eight CBET

principles to some extent in TVET teacher education programs (aggregated $M=4.08$, $SD=0.99$) (for individual principles, the ratings fall between mean values of 3.85 and 4.35), indicating that the programs somehow exhibited the characteristics of CBVE.

Table 5.1. Descriptive and ANOVA analysis responses on the realization of CBET principles in TVET teacher training programs (N=teachers 54, students 149; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6); M=mean, SD=standard deviation).

Item	Respondents	M	SD	F	Sig.	Eta squared
Program design	Students	3.39	1.08	34.12	.000	0.14
	Teachers	4.35	0.87			
Learning activities	Students	3.24	1.11	26.56	.000	0.12
	Teachers	4.14	1.07			
KSA integration	Students	3.48	1.12	5.04	.026	0.02
	Teachers	3.85	0.80			
Student assessment	Students	3.24	1.02	33.80	.000	0.14
	Teachers	4.14	0.86			
Student guidance	Students	3.21	0.73	67.17	.000	0.25
	Teachers	4.35	1.16			
Self-reflection	Students	3.40	1.20	20.410	.000	0.09
	Teachers	4.21	0.89			
Self-steering	Students	3.27	1.22	27.83	.000	0.12
	Teachers	4.25	0.97			
Aggregated mean/SD	Students	3.32	1.07			
	Teachers	4.08	0.99			

Teacher training teachers' and students' mean scores showed a statistically significant difference for most of the principles, although the differences were small (except for the principle of flexibility and student guidance). Teachers and students rated the flexibility principle below average with no statistically significant difference between the mean score of the two groups ($F [1,202] = 0.22$, $p>0.05$).

It appeared that seat time was given more importance than individual competence development in TVET teacher training programs. For the student guidance principle, the teachers' rating was much higher than students' ratings, showing a moderate statistically significant difference ($F [1,202] = 67.17$, $p>0.05$, $\eta^2 = 0.25$). The realization of KSA integration was the least rated by teachers, though the rating was modestly above average, whereas the students' rating was below average with a very small statistically significant difference ($F [1,202] = 5.04$, $p<0.05$, $\eta^2=0.02$). It appeared that not much attention was given to the integrative approach to teaching, which is a prerequisite for the competence-based approach.

Teacher training students were asked to reflect on the extent to which they developed teaching competencies (see Table 5.2). Subject matter content and practicalities were rated relatively

higher, whereas course (module) syllabus design and teaching strategies were rated lower than the other teaching competencies.

Table 5.2. Teacher training students' response on developing teacher competencies (N=149; Scale: fully developed=5, mostly developed=4, sufficiently developed=3, somewhat developed=2 and not developed=1; M=mean, SD=standard deviation).

No.	Statements	M	SD
1	Designing course (module) syllabus and teaching strategies	2.91	1.19
2	Planning lessons and learning activities	3.14	1.16
3	Instructional and interpersonal communication skills	3.05	1.18
4	Curriculum development and evaluation skills	2.99	1.26
5	Classroom management and performance monitoring	3.03	1.19
6	Planning appropriate methodologies and systems delivery	3.05	1.19
7	Outcome based assessment	2.93	1.12
8	Guidance and coaching and providing feedback	2.94	1.15
9	Subject matter content and practicalities	3.17	1.14
10	Collaborative and reflective learning and teaching	2.95	1.21
11	Manage time efficiently and effectively	2.99	1.18
12	Teachers' professional ethics	3.09	1.23

Considering the scale average (M=3) as a threshold of comparison, the rating of the level of developing teaching competencies falls between the “somewhat developed” and “sufficiently developed” response categories. The overall rating of the development of teacher competencies appears to be low.

Teacher training students were also asked to reflect on the teaching methods the teachers frequently used in teacher training colleges (see Table 5.3). The method of teaching mostly used by the teachers was lecturing, followed by group work and presentation and teacher demonstration. Using industry-based practitioners and visiting industries for experience sharing as a strategy for providing authentic learning opportunities for the students was not practiced. Teaching methods that enable the students to be practically proficient and independent learners such as individual student demonstration and self-learning/self-reflection methods were poorly utilized.

Table 5.3. Teacher training students' response on methods TT teachers frequently used (N=149; Scale: always=4, most often=3, sometimes =2, not at all=1; M=mean, SD=standard deviation).

No.	Statements	M	SD
1	Problem solving	2.42	0.91
2	Teacher demonstration	2.59	0.80
3	Industry expert demonstration	1.87	1.24
4	Individual student demonstration	2.20	0.90
5	Lecturing	3.34	0.86
6	Industry experience sharing	1.81	0.92
7	Self-learning and self-reflection	2.28	0.93
8	Group work and presentation	2.63	0.77
9	Project-based activity and presentation	2.40	0.87

Although problem solving and project-based activities were used, they were not emphasized compared with lecturing, taking the scale average (2.5) as a threshold of comparison. Hence,

teaching in TVET teacher training colleges appeared to be prominently lecture-based and teacher-dominated.

5.4.2 Interview response for study one: TVET teacher preparation

With regard to program design, one of the questions that was presented was “To what extent do the TT programs reflect the TVET curriculum?” The collective response indicated that the TVET teacher training programs do not have standard curricula that fully reflect the current TVET curriculum; rather the TVET curriculum is an adjustment of engineering courses, that is, courses are selected from the engineering department and adjusted by teachers to fit the TVET curriculum. On the same issue, one interviewee noted that:

TVET provides training in specialized areas but the teacher training programs provide general training. For example, in the automotive technology TVET curriculum, there are five specializations such as engine technology and auto-electricity. Students assigned to our department were from these specializations. Our training, however, is on automotive technology, not on engine technology or auto-electricity. Students take selected courses from all specializations and complete as generalists. The graduates are expected to teach in all specializations, but they are not well trained in every specialization. It is not a systematically designed TVET teacher education.

Regarding the administrative structure of the TT programs in ASTU, one interviewee (a senior teacher who has worked at ASTU for more than 20 years at various levels – teacher, coordinator and department head) added that:

In practice there are conflicting situations at ASTU. As a university education program, the teacher training program is not fully practical; it also includes theoretical parts, some may not be happy with that. Because the teacher training teachers are from engineering departments, they tend to pool the programs to be more scientific and theoretical which focuses on design, reducing the practical aspects. The engineering teachers consider the teacher training program as a burden because the program is not housed in the engineering departments and also they want the program to be pure engineering.

The other question presented to the respondents was “Given that the TVET curriculum is competence-based, to what extent is the TT program competence-based?” The respondents indicated that:

The existing TT programs are course-based, not competence-based as in the TVET curriculum, although the idea of competence is known in the college. Many of the teachers that teach in the TVET TT programs are products of course-based education so it is difficult to say that they deliver courses using competence-based approaches.

However, one of the senior teachers (also department head) reflected on the design of the courses in his department as follows:

Even though the program design and delivery in the department is course-based (not competence-based in design), an attempt was made to include critical competencies in the courses. As the courses offered are related, I believe that a competency that is missed in one course will be obtained in another course.

The other question presented to the respondents was “Given that the TVET curriculum follows the modular approach, are the TT programs modular?” They responded that “What is now offered is a course-based, not a modular-based program, although an attempt was made to make use of the modular format”. On the same question, one of the interviewees (most senior teacher) reflected that:

The modular approach is not clear for teachers; what is done in practice is binding already existing courses together in a book form and calling it a module instead of sequencing courses in a manner so that competences are developed one after the other. Every teacher is required to finish the course bundle. Students are required to register for 15–18 credit hours per week and delivery is parallel, not as it is in a modular system.

The other question presented to the respondents was “Given that the TVET curriculum is competence-based, is the student assessment competence-focused?” The collective response was:

In principle the college assessment strategy is continuous assessment. In practice, however, this is inconsistently applied, i.e. its application varies across departments and teachers. Some teachers give two or three tests and assignments, but the well-established ones are mid-term tests and final examinations. Students are also engaged in projects, especially final year students. However, the projects were given as group work, not individually.

One of the teachers interviewed reflected that:

I make my students report on what they have done in the workshop every day; students get the opportunity to see various aspects of the course to prepare the report. Because of large class sizes, honestly speaking, I don't read the report every week; I use the report only as an attendance tool.

On the same issue, another teacher interviewed stated that:

I give projects for students individually and in groups. The individual projects are difficult to evaluate because of large class sizes. Because of many groups, it is difficult to evaluate the practical group projects, at least I make them present it mathematically on paper. There were situations in which we were forced to make students pass based on theory-based final year projects because we were not able to provide project facilities/materials for practical project work.

The other question presented to the interviewees was “Is there a practice of assessing TT training graduates at the institution or department level to verify whether the students have developed the core competencies to the required level?” In general, the participants said that:

there is no such practice in the college and no assessment practice based on a pre-determined achievement standard. Rather, assessment of TT students is done by teachers and assessment is norm-referenced where the results are reported in letter grades. What is required is that every student has to have a cumulative grade point average of two out of four for graduation on teacher-based assessments.

The other question presented to them was “To what extent do trainees have the opportunity to use the training facilities such as machines to develop their individual competence in practice?” The collective response was as follows:

Although ASTU is much better than other engineering colleges, there is a shortage of laboratory (workshop) materials for practical activities. Besides, many TVET teacher training students are assigned to the departments and share the facilities with engineering students and practice only within the period allocated to them. So, they will not get enough time to practice. As a result, it is very difficult for teachers to provide individual practical assignment.

The other question presented to the interviewees was “To what extent are the students capable of understanding the lessons?” The collective response indicated that the ability of many students to understand the engineering related sciences (theory part) and mathematics is weak compared to the engineering students, although the students are relatively good in the practical aspects because they have practical exposure while in TVET training. The major problem observed by the participants was the students’ English language proficiency. The last question presented to interviewees from ASTU was “Is there a follow-up for teacher training graduates to ascertain how they perform in TVET colleges as a feedback for improvement?” They responded that there was no formally conducted tracer study implemented at the department level; they were doubtful whether such a study was conducted at the institution level.

From what has been presented, it could be inferred that teacher training teachers and students did not consider their TVET teacher education programs to be competence-based. The delivery modalities mostly applied by teacher training teachers fall within the transmissive (teacher-centered) modalities in which individual students’ active engagement in the learning process and workplace practices are given less attention. As a result, it is difficult to say that TT students have adequately developed the teaching competencies and practices to effectively discharge their challenging roles and responsibilities in competence-based TVET. Seen in the light of the CBE principles, it could not be said that the TVET teacher education programs are fully aligned with the requirement of competence-based TVET.

5.4.3 TVET teachers' engagement in professional development

In this part, the professional development activities of TVET teachers were grouped into three categories for clarity of presentation: teacher-level activities (Table 5.4), college-level initiatives to support teacher learning (Table 5.5) and teachers' perceptions of the value of TPD activities (Table 5.6).

As can be seen in Table 5.4, the majority of TVET teachers did not engage in action research as a professional development activity, indicating that TVET teachers' actions are not backed by research which provides new insights and improves teachers' knowledge and practices. TVET teachers did not often visit industries for personal improvement or invite practitioners for practical learning.

Table 5.4. TVET teachers' involvement in self-initiated professional development activities (N=113; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6); M=mean; SD=standard deviation).

No.	Statements	M	SD
1	Teachers get most of new knowledge from reading books	4.11	1.16
2	Teachers self-reflect on their past performance for learning	3.99	1.14
3	Teachers engage discussion with colleagues to share experience	3.80	1.43
4	Teachers collectively reflect with colleagues and students	3.77	1.05
5	Teachers conduct action research individually for knowledge	3.06	1.37
6	Teachers visit industries for learning purposes	3.02	1.36

Regarding the administrative conditions for TPD (see Table 5.5), most teachers responded that there were no formally planned and systematic TPD schemes in TVET colleges. Also, discussion forums where teachers come together to share academic and pedagogical experiences were absent.

Table 5.5. Administrative conditions for TVET teachers' professional development activities (N=113; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6); M=mean; SD=standard deviation).

No	Statements	M	SD
1	Opportunity for upgrading skills through in-service training	3.57	1.32
2	Workshops conducted regularly to improve teachers' knowledge/skills	3.48	1.38
3	Teachers invite practitioners from the industry for practical knowledge	2.99	1.22
4	Support of the administration for individual teachers' TPD effort is adequate	2.96	1.11
5	There is formally planned and systematic TPD in the TVET college	2.90	1.22
6	Forum exists for teachers to meet to share experiences	2.64	1.21

Teachers rated in-service training opportunities as more or less average, indicating that in-service training is one of the mechanisms employed to upgrade TVET teachers in TVET colleges. Support from the administration for teachers' individual development effort was minimal. Also, regular workshops to improve teachers' knowledge and skills were below the expectations of a significant number of teachers. Inviting industry practitioners for practical

improvement by working with TVET teachers was not practiced in TVET colleges, and teachers' academic forums in which teachers reflect on and share academic and pedagogical experiences do not exist in TVET colleges.

As shown in Table 5.6 below, most of the teachers believe that engaging in TPD as a tool for teacher learning is primarily their responsibility, not that of the administration. TVET teachers consider TPD to improve the quality of education and training and, at the same time, to be essential for their career development.

Table 5.6. TVET teachers' beliefs on TPD activities (N=113; Scale: strongly disagree (1), disagree (2), somewhat disagree (3), somewhat agree (4), agree (5) and strongly agree (6); M=mean; SD=standard deviation).

No	Statements	M	SD
1	TPD is the concern of administration, not of teachers	2.55	1.29
2	TPD program essential to improve quality of education and training	4.95	1.26
3	TPD program essential for career development of teachers	4.82	1.24

5.4.4 Interview response on professional development of TVET teachers

An interview was conducted with four TVET administrators who worked as teachers and department heads/program coordinators, to incorporate the administration's point of view on TPD activities in the colleges. One of the questions presented to them was "Is there a planned teacher professional development program in your TVET college?" Their collective response was:

Teachers' professional development is considered as one of the important pillars of the TVET system. It is also practiced in the TVET institutions. It is, however, difficult to say that a planned and well-structured teachers' professional development program which shows what type of TPD, when, how, by whom, etc. exists.

Another question presented to the interviewees was "What teacher professional development activities were practiced in the TVET colleges at the institutional level?" The collective response was:

In most cases, pedagogical training in and outside TVET colleges was provided in cooperation with the regional TVET agency. Teachers got training in preparing Teaching, Training and Learning Materials (TTLM). Some teachers also participated in developing the curriculum. Many TVET teachers participated in pre-service and in-service training for higher qualifications (BA and MSc degrees). Guidelines, for example on assessment and TTLM preparation, were provided for teachers which enhance their practice.

Another question presented to the interviewees was “Are there discussion forums designed for teachers’ learning at the college or department level in which teachers exchange ideas and share experiences?” The collective response was:

At times, meetings were conducted with teachers to inform or train them on policy or school-based new developments at the institution level, for example to provide training on reforms and pedagogical skills for teachers during vacation times. At the department level, teachers conduct meetings periodically to discuss matters related to their departments. Most of the times, the discussions at departmental meetings were mainly for monitoring purpose, not specifically for the purpose of teachers’ learning.

5.5 Discussion and conclusion

5.5.1 Discussion

The purpose of the study was two-fold: 1) to examine how TVET teachers are prepared for competence-based TVET in teachers’ and students’ perspectives, and 2) to explore TVET teachers’ involvement in professional development activities to enhance their knowledge and instructional practices.

The results of research question one show that teacher training teachers and students differ in their perception of the way in which the teacher training programs are designed. For example, teachers rated program design higher than students, although the difference was not very much. The reason for this might be attributed to teachers observing some features that the competence-based approach shares with the traditional approach (Wesselink, 2010). Competence-based vocational programs are based on competence profiles that reflect professional competencies (Wesselink, 2010), while TVET teacher training program design was not based on a careful analysis of what professional vocational competencies teachers require in competence-based TVET, or the knowledge and skills gaps of incumbent TVET teacher trainees. The TVET teacher training programs are course-based (courses adjusted by teachers), not based on vocational teachers’ competence profiles. Thus, the TVET teacher training program design was incongruent with the design characteristics of competence-based TVET.

Important elements of the competence development process include designing relevant and authentic learning activities and integrating knowledge, skills and attitudes in practice (Wesselink, 2010). As the TVET teacher training programs are technical in nature, involving machines, tools, moving, fixing, and so on, they involve practical activities that engage students. As a result, the learning activities may exhibit some level of relevancy and

authenticity. Comparing students' ratings of learning activities with the teachers' interview results in relation to shortages of materials and large class sizes, the results of research question one further show that there is not enough of an opportunity for students to develop their competencies through the practice-based learning activities. Furthermore, the teaching-learning process in TVET teacher training programs does not focus sufficiently on an integrated approach to teaching knowledge, skills and attitudes. Knowledge, skills and attitudes need to be integrated into students' practical learning, as competence is about the successful application of knowledge, skills and attitudes in practical situations (Sturing et al., 2011; Ravoto, 2013). Thus, educators who prepare teachers for competence-based schools are expected to cultivate such integration while teaching and designing learning experiences (Seezink, Poell & Kirschner, 2009; Wesselink, 2010). The practice might be linked with a lack of appropriate or adequate training of teacher trainers on the competence-based approach in general, and on pedagogical competence in particular.

As the results of research question one show, student assessment in TVET teacher training programs appeared not to meet the competence-based TVET requirements. Competence-based TVET requires students to demonstrate that they are capable of performing assigned tasks to the level required, depending on the task characteristics at every level of task accomplishment. Although the assessment system claims to be continuous, the findings indicate that its application is inconsistent from one program to the other. Moreover, the focus was not on assessing individual competence but more inclined to norm-referenced as the traditional assessment approach. This implies that the assessment should be led by a certain level of achievement determined in advance without limiting students' motivation to achieve more. The study further revealed that the teacher's role in TVET teacher training in guiding students was not appreciable, although the teacher's role in the competence-based approach is more on coaching and guiding students through follow-up and monitoring progress (Wesselink, 2010). Although teachers rated guidance higher than students, the difference was not significant to warrant that higher level guidance was provided to teacher training students. It is important that "students receive timely, differentiated support based on their individual learning needs" (Shubila & Sturgis, 2012, p.4). The provision of feedback and follow-up in students' learning processes as a strategy to assist students to learn at their own pace was not profoundly observed. The study findings show that TVET teacher trainees did not have much opportunity to learn from their personal experiences through self-reflection and self-steering practices. One of the responsibilities of teachers in the competence-based learning process is

to empower students in their own learning through the use of inquiry-based teaching-learning strategies for self-reflection and self-directed learning (De Bruijn & Leeman, 2011). Through these strategies, teachers not only help students to take responsibility for their own learning but also involve them in decisions on matters that affect their learning (De Bruijn & Leeman, 2011). This is crucial in competence-based teaching-learning as the purpose is to enable competence-based TVET graduates to perform independently in the workplace (Mulder, 2014). For examples, teachers can use assignments as a self-reflection exercise by making the students present the assignments individually or in groups in the classroom or workshop. To foster self-directed learning, teachers can give a chapter to be reviewed or a new task which students work on by themselves to present to the class, followed by the teacher's feedback. The teacher practice in TVET teacher training programs might be linked to the teachers' long experience in traditional teaching-learning strategies, where students usually remain passive in the learning process and possibly have less exposure to the competence-based teaching-learning process.

The results of research question one further indicate that the core teaching competencies were not well developed and that it was difficult to say that the teacher trainees were adequately trained to effectively handle complex teaching duties and roles in competence-based TVET. Teacher education aims at developing teachers' teaching competencies that go in line with the characteristics of the program the teachers are trained for. Bronkhorst et al. (2011) pointed out that "student teachers [teacher training students] not only have to learn what a teacher should know, but also how to put gained knowledge into action" (p.112). According to Koehler and Mishra (2009), teachers conduct teaching in "highly complex, dynamic classroom contexts that require them constantly to shift and evolve their understanding" (p.61). Thus, graduates of teacher training programs are required to be competent on subject-specific knowledge while, at the same time, needing to sufficiently develop, if not master, pedagogical knowledge and applications (Harris, Mishra & Koehler, 2009). The results also show that course delivery appeared more inclined towards "transmissive approaches to teaching" (Loughran, Berry & Mulhall, 2013, p.2). Teaching methods that are believed to develop students' independent learning skills such as problem solving, self-reflection, self-learning and individual demonstrations were not given much emphasis in course deliveries. Developing these skills is crucial as pre-service teacher education is the foundation upon which the future learning and career development of teachers greatly depends.

As the results of research question two shows, TVET teachers believe that TPD is their responsibility and that it contributes to their career development and improves the quality of education and training. TVET teachers' personal initiative to engage in TPD activities, however, appeared to be low. Although reflection on teachers' past experience and discussions among teachers were mentioned, the practices appeared not to be utilized advantageously. This finding coincides with Abebe (2010), who stated that TVET teachers' engagement in self-directed learning initiatives and individual learning projects were minimal. Research, especially action research, as an inquiry conducted by teachers to understand and improve the quality of actions on instruction and to be innovative in their professional lives (Hine & Levery, 2014), is considered a very important reflective activity that enables teachers to examine themselves and their environment so that they can grow, make changes and improve (Ryan, 2013; Brown, 2011; Wyatt, 2011). TVET teachers, however, did not engage in action research as a professional development effort, though teaching and research are complementary elements of the learning process that inform and enrich one another (Bronkhorst, 2013). Through action research, teachers develop their research skills, know more about the teaching-learning process, enhance greater collaboration with colleagues (Atay, 2008) and enhance self-efficacy (Henson, 2001). As motivation is one important factor in developing the will to learn (Bronkhorst et al., 2011), it appears that TVET teachers lack intrinsic motivation for engaging actively in profound professional learning activities to support what they might learn from their daily practice.

TVET teacher education plays a key role in preparing future teachers who are expected to work towards high-quality TVET outcomes. Since the TVET system in Ethiopia is competence-based, there should be curricular and structural alignment between the TVET curriculum and that of TVET teacher training programs. It is also imperative that the delivery approaches in TVET teacher training programs are in line with that required by competence development. In order to consistently maintain the high-quality TVET outcome, TVET teachers should update their knowledge and skills while teaching and remain abreast of new developments, innovative practices, changes in the workplace and technological advances, through well-planned and organized professional development. This requires that all the parties concerned revitalize TVET teacher education policy and practice and the conditions of continual teacher development, in line with competence-based TVET standards for the successful realization of the TVET goals in Ethiopia. Whether TVET teacher education is course-based or modular-based, it has to be aligned with the TVET requirement, which is that

workplace and professional teacher competencies serve as a reference for its curriculum and practices. In this regard, there is still important work to be done to transform the current TVET teacher education into a comprehensive competence-based program.

5.5.2 Conclusion

Several conclusions can be drawn from the results of this study. First, TVET teacher education programs lack alignment with the competence-based TVET curriculum because the programs have not been developed based on the principles of competence-based education and training. The training approaches applied in TVET teacher training colleges are not competence-based, though some elements of competence-based education are being observed. Second, in terms of the delivery methods applied, TVET teacher training programs appear to be more teacher-centered than student-centered as delivery methods that actively encourage students to learn independently and cooperatively were not significantly utilized. Seen in the light of the complexity of teaching and the extended role of teachers in competence-based TVET, the teacher training students do not appear to have sufficient capability in pedagogical content knowledge to effectively handle the complex teaching responsibilities.

Third, the TVET system is not supported by teacher-based research which would help develop teachers' knowledge, innovate teaching-learning strategies and improve practice. Fourth, TVET teachers' personal initiative, collaborative learning, administrative effort and support for teachers' professional development were minimal. There is no systematic professional development plan to provide opportunities for teachers to develop continuously so that they can contribute to high quality student learning. The professional development TVET teachers are engaged in falls within the traditional approach, for example training, workshops and reading. Although effort has been made to improve teacher quality, practice in TVET teacher education and professional development, it is not possible to say that TVET teachers are well-prepared to effectively handle their teaching responsibilities and play their new roles as competence-based TVET demands. Revitalizing the TVET teacher education and professional development programs in line with competence-based TVET therefore needs to be urgently addressed by the Ministry of Education and other agencies to improve the realization of competence-based TVET objectives.

5.5.3 Limitations and implication for research and practice

Although this study has shown the status of the extent to which TVET teacher programs and content delivery approaches are aligned with competence-based TVET, it has certain limitations. The study on TVET teachers' preparation was based mainly on perceptions of teachers and students of TVET teacher training colleges. A limited number of department heads of academic programs were interviewed, which limits the generalizability of their reflection for all academic departments. Although teacher training teachers' and students' reflections significantly indicate the relevance of the content, how programs are conducted, managed and assessed, incorporating the administrators' reflection, would have been valuable to provide a complete picture on the status of the TVET teacher training colleges. Using this study as a background, all-inclusive research with quantitative (questionnaire) and qualitative (interview, observation, curriculum document analysis) components needs to be carried out on the same issue.

In practice, the results of this study imply that the TVET teacher training programs should be re-constructed in a manner that fits the TVET system. The teachers of teacher training programs need to be given adequate training in competence-based education and training systems, incorporating fundamentals of competence theories, competence-based curriculum development, competence development focused pedagogy and practice.

Chapter 6

General Conclusion and Discussion

6.1 Introduction

This chapter summarizes and presents the combined results of the studies presented in the previous chapters. Given that the results of each study have been discussed in their respective chapters, this chapter discusses the main findings and their implications for future practice. The main findings of the research questions are first presented. Second, the research findings are discussed in a broader context. Third, the practical and theoretical contributions of this thesis are provided. Fourth, the study's limitations and directions for future research are presented and, fifth, recommendations for policy and practice are made.

6.2 Main findings and reflection on the results

6.2.1 Development of TVET in Ethiopia and its current challenges

There is a general consensus that TVET plays a crucial role in socio-economic development, improving people's lives and reducing poverty by increasing the efficiency of the workforce (Afeti, 2011; Atchoarena & Delluc, 2001; Kingombe, 2013). Consequently, TVET has become a core national agenda in many countries (AU, 2007; Oketch, 2007; Nyerere, 2009). Ethiopia has implemented TVET since the 1940s, to enhance its socio-economic development and reduce poverty. Although TVET in Ethiopia has passed through various development stages in the last 70 years, what has been accomplished, the challenges TVET faced in those stages and to what extent the various stages built on the previous stages have not been thoroughly investigated as a basis to inform the present and future prospects of TVET in Ethiopia. Thus, the main objective of Chapter 2 was to explore the stages the TVET system has passed through in the last 75 years and its current challenges, to learn from its achievements and pitfalls and therefore shape the TVET system in the country. The guiding research questions for this study were: *“How has the TVET system developed in Ethiopia since 1940 and what lessons can be learned from that development as a basis for current and future practice?”* and *“What challenges are currently being encountered or are expected to be encountered in the future in implementing competence-based TVET in Ethiopia?”*

These research questions were dealt with in Chapter 2 of this thesis. The results of this study show that, although TVET has been operational since the 1940s, TVET development has lacked consistent and stable policy direction, mainly because the development of the Ethiopian education system, including TVET, has been greatly influenced by changes in political governance. The successive governments have designed the country's education

system to fit their political orientations rather than based on the appropriateness of the policy to the country. For example, the vocational and comprehensive school TVET programs of the 1960s were replaced by socialist-oriented TVET programs in 1974 with a different structure, curriculum and delivery arrangement, until this was discarded and replaced with a new TVET system in 1994. The reforms were also implemented without the full consent of the relevant stakeholders (see Negash, 2006; Tefera, 1996). In some cases, the changes introduced did not ensure the quality of the TVET outcome. For example, enrolment in TVET during the comprehensive and socialist periods was based on *merit and interest*, so that students with a good academic background joined TVET. In the current TVET system, however, these two criteria have been totally abandoned, with the result that TVET has become the domain of low academic achievers. The education policy and TVET strategy cannot explain why academic merit and interest have been abandoned. In addition, successive TVET systems have been built from scratch, with no critical appraisal of the merits and demerits of previous systems. This has prevented the systemic development of TVET, by which one TVET system builds on the other, taking the salient aspects from the preceding one. Such inconsistencies in educational policymaking appear to have hampered the country in producing a consensus-based, national education system including TVET that reflects the socio-economic dynamics of the country.

This lack of consistent policy direction means that TVET in Ethiopia has long been supply-driven instead of reflecting labor market demands. In 2008, a competence-based TVET system was adopted based on labor market (occupational) standards, with competence development as the cornerstone, to make TVET relevant to the world of work and to create better employment opportunities for TVET graduates (MOE, 2008). As competence-based TVET has become the leading paradigm in TVET in many countries (Biemans et al., 2004; Mulder et al., 2007), Ethiopia's adoption of it may help boost TVET quality. Much effort has been made to realize competence-based TVET through the formulation of relevant policy frameworks such as TVET strategies, qualification frameworks and occupational assessment systems (Baraki & Kemanade, 2013).

Despite the commendable effort undertaken to realize competence-based TVET, the study shows that CBET implementation has encountered various challenges, such as lack of adequately prepared CBET teachers and resources, frequent changes in curricula, and lack of cooperation from employers for the cooperative training. The effect of these challenges would have been mitigated had CBET been implemented gradually built on a strong implementation

foundation – in other words with adequate preparation. As a result, it has been difficult to maintain the quality of training, as reflected in the low performance of TVET students in the national occupational assessment, although improvements in TVET students' national assessment results have been observed from time to time. Overall, the results suggest that realizing educational policy intentions, however innovative and acceptable they may be, is difficult if not supported by a well-crafted implementation strategy that reflects the implementation and resource potential context. In the case of implementing competence-based TVET in Ethiopia, priority should have been given to training existing teachers in the competence-based approach before implementation. Better realization of the competence-based TVET would have been achieved if there had been adequate teaching-learning material resources for teachers' and students' practical learning, if greater awareness of and motivation for cooperative training had been created amongst employers, if the competence-based approach had been started in selected areas as a pilot program to build experience, and if the program had been gradually expanded into other areas.

Thus, the introduction of new vocational programs and the expansion of public TVET must be undertaken carefully, considering available resources, to sustainably implement and maintain the quality of the programs. As indicated in Chapter 2, public TVET colleges provide training in many specialized vocational programs and are financed by the government, which has made TVET implementation difficult due to financial constraints. Thus, the government needs to focus on selective training programs that are critical for the country's development instead of investing scarce resources in many programs, as observed currently in public TVET colleges. Such a program structure leads to the dispersion of the scarce resources across programs, making it difficult for the TVET colleges to create the appropriate learning environments essential for quality training. Besides, given the weak industrial base of the country and the employment situation, training in narrow specializations within a specific occupation may not be viable, and this needs to be critically evaluated in light of graduate employment opportunities.

6.2.2 TVET teachers' participation in TVET strategy, curriculum development and implementation

Teacher participation in educational policy and curriculum reform is vital for effective implementation of the reform because teachers translate policy and curriculum intentions into reality (Carl, 2005; Handler, 2010; Oloruntegbe, 2011). In addition, appropriate

implementation environments need to be in place for teachers to effectively realize the reform intentions. This is because teachers' involvement in reform matters coupled with proper implementation environments greatly influence teachers' perceptions towards working in the education system, which in turn may influence their motivation and education outcome. Research findings in the Ethiopian education arena show that teachers have been marginalized in the educational policy and curriculum debate; in most cases, reforms were implemented with no consent from teachers (see Negash, 2006; Tefera, 1996). As indicated in Chapter 2, a new competence-based TVET strategy (policy) was developed to guide the TVET system in Ethiopia in 2008. To what extent TVET teachers participated in the new TVET policy discourse and curriculum development before implementation has not yet been researched as one of the factors that influences teacher motivation and commitment. Therefore, study three examined the degree of TVET teachers' participation in TVET policy/curriculum development and implementation discourse and its relationship to teachers' overall perception of the competence-based TVET system considering their working environment. The research questions that guided the study are: a) *What is the extent of TVET teacher participation in the development of the competence-based TVET strategy, curriculum and implementation process/discourse?*, b) *What problems have teachers encountered in implementing the competence-based approach in TVET colleges?*, and c) *How do teachers perceive the competence-based TVET system in relation to their participation and problems they encounter in implementation?*

Chapter 3 of this thesis addresses these research questions. Teachers play a crucial role in realizing the objectives of educational reform to achieve a systemic change such as competence-based education and training. It is believed that CBET can bridge the rift between classroom learning and workplace requirements by connecting learning in the educational setting and the workplace (Wesselink, 2010). However, the literature affirms that competence-based education lacks clarity both in theory and practice as competence is interpreted and applied in different ways (Biemans et al., 2004; Moore, Cheng & Dainty, 2002; Wesselink, 2010). This suggests the complexity of practicing CBET without understanding it and its implications, and implies that those who are responsible for implementing CBET must understand not only what CBET is but also what it entails in practice in terms of the nature of the curriculum, resources, roles, activities and instruction, before implementation. A shared understanding among those responsible for implementing

the reform, such as policymakers, administrators and teachers, is a prerequisite for the successful implementation of CBET and for monitoring its realization (Wesselink, 2010).

As a systemic reform, CBET implementation significantly influences teachers' actions and roles (Seezink, 2009). This is because CBET requires teachers to change their teaching practices to facilitate learning instead of being knowledge transmitters (Smith, 2009; Wesselink, 2010), by integrating theory and practice in real-life professional situations (Aquilante et al., 2012). Thus, it is important that teachers develop sufficient prior knowledge and understanding of the relevant aspects of the new approach before putting it into practice. In other words, teacher participation in strategy, curriculum development and implementation plays a critical role in realizing educational innovations such as competence-based education.

As study three indicated, CBET was declared a strategy for TVET and implemented automatically without extensive deliberations and understanding by TVET teachers. TVET teachers' participation in TVET strategy, curriculum development and implementation was minimal, although teachers' participation correlates with the teachers' overall perception of the TVET system and their work (see Chapter 3). It therefore represents top-down policy, disengaging those at the grassroots level. It appears that teachers were forced to implement the new competence-based TVET reform before they understood it fully. The competence-based TVET strategy, as a policy intervention to make TVET relevant and quality-oriented, was introduced over the structure and resource conditions of the old supply-driven TVET system by teachers with no training in the competence-based approach, teaching strategies, assessment and workplace experience. This can cause teachers to work under stressful, overstretched and frustration conditions, which jeopardizes successful implementation.

In fact, not giving the proper space for teachers to play their role in educational reform is a common scenario in Africa, especially when new reforms are initiated. For example, the same scenario was seen when outcome-based education was suddenly introduced in South Africa in 1999 without the knowledge and deliberation of the teachers (see Janson, 1998). Oloruntegbe (2011) also reported a similar scenario in Nigeria. As the study indicated, teacher involvement was limited to instructional activities such as teaching material preparation, with teachers considered "recipients" of what is developed elsewhere rather than "developers" (Carl, 2005).

Linking teachers' minimum participation and the insufficient training resources in TVET colleges to TVET teachers' overall perception toward the TVET system, it can be concluded

that the decision to practice CBET was not supported by a well-crafted implementation strategy that guides the gradual implementation of the policy. CBET was implemented before TVET colleges had built an adequate infrastructure suitable to implement CBET, most probably on the assumption that “requirements will be fulfilled in progress”. It appears that these conditions have exposed the current TVET system to many challenges, which have made its proper implementation difficult. These challenges are believed to influence the quality of the TVET outcome expressed in terms of TVET students’ achievement in national occupational assessment, in which many of the students fail to be competent. This could be due to teachers’ dissatisfaction with the education and training environment in TVET colleges, which erodes TVET teachers’ motivation to stay in the TVET system. Furthermore, the findings suggest that the more teachers perceive that they are actively involved in matters related to educational reform and that they work in a proper implementation environment, the better will be their attitude and motivation towards the new TVET system. As far as it is through teachers that new educational reforms are implemented, policymakers are advised to create a forum for teachers to deliberate on the new reform before implementation so that the teachers have a clear picture and understanding of and positive attitude towards the reform before implementation. Also, the implementation problems encountered by teachers and their overall perception of the TVET system are positively related. In this case, the more teachers perceive their working environment as conducive, the better will be their attitude towards the TVET system. This is in line with the assertion of Somech (2010) that teachers’ participation in decision-making influences work effort, commitment and motivation. Initially starting with a few programs, which releases some resources for creating an appropriate working environment, and gradually introducing new programs as resources increase, may be useful to reduce the resource-related problems of TVET teachers.

6.2.3 The ‘competitiveness’ of TVET in Ethiopia and its relationship with graduate job performance

Competence-based vocational education aims to build the capability to perform a task to the level of proficiency required in professional situations (employment) (Mulder et al., 2007). Thus, competence-based vocational education prepares professionals to perform effectively in the workplace (Biemans et al., 2004). As the curriculum and activities in the competence-based programs are based on and connected to workplace requirements by integrating school-based practice with real work situations, graduates of competence-based programs are expected to perform jobs effectively and to adjust easily to workplace reality (Wesselink,

2010). This potential will be realized if vocational education programs are implemented in accordance with CBE principles. Based on this assumption, competence-based TVET has been introduced in Ethiopia. However, the extent to which TVET programs are aligned with competence-based principles and the relationship between this and graduate job performance needs to be investigated. Therefore, this part of the thesis examines the extent to which TVET in Ethiopia is competence-based in light of the CBVE principles (using the CBVE model), and whether competence-based education and training influences graduate job performance in the labor market. The research questions that guide this study are: a) *To what extent are the principles of CBVE implemented in TVET programs?*, and b) *To what extent does CBVE influence or facilitate the performance of the graduates in employment?*

Chapter 4 of this thesis deals with these research questions. The results show that not only is CBVE practiced in the Ethiopian TVET system, but it has also become the leading paradigm that shapes the TVET system. Given the newness and complexity of CBET and the implementation challenges, commendable effort has been made to implement competence-based TVET in Ethiopia, both at policy and implementation levels. Radical interventions made to enhance the quality of TVET include the recognition of systemic problems with the TVET system, the development of a competence-based TVET strategy that promotes an occupational standards-based curriculum, the implementation of occupational competence assessment mechanisms, and cooperative training to connect school work with workplaces. However, the extent to which the competence-based TVET curriculum is implemented in TVET colleges largely determines the level of competence that the graduates will have which, in turn, affects graduate job performance in the labor market.

The results of Chapter 4 show that TVET teachers and students vary slightly in their judgement of all the principles in the TVET programs. However, competence-based TVET is not performing well with regard to the most important practical dimensions of CBVE (mainly the “how” aspect), such as the integration of knowledge, skills and attitude, flexibility, self-reflection, self-steering and assessment. That is, the practice is far from the full realization of competence-based principles, even though factors such as the integration of knowledge, skills and attitudes and the link with the practical context is crucial for success in job environments (Wesselink, 2010). Equally important in competence development are: learners’ autonomy, which makes students responsible for their own learning; cultivating the skill of working independently; designing programs and learning activities to reflect student ability and pace of learning; and assessment in an authentic situation to demonstrate competence (Gulikers et

al., 2009; Sturing et al., 2011; Wesselink, 2010). If these are not sufficiently developed in learning trajectories, it cannot be concluded that these programs are fully competence-based. In this regard, much effort is required to make TVET in Ethiopia fully competence-based.

The results also show that there is an indication that the ‘competitiveness’ of a TVET program enhances graduate job performance. This signals that the higher the realization of the CBET program, the better the performance of graduates in the workplace. This finding is in line with the assumption that CBET has the potential to bridge the gap between classroom learning and labor market reality and that it enables graduates to perform (Biemans et al., 2004; Wesselink, 2010). For less developed countries like Ethiopia, however, the full realization of competence-based education in the TVET domain of practice remains a challenge, given the complexity of implementing competence-based education. In light of this, much effort is required to improve the performance of competence-based TVET in Ethiopia.

6.2.4 TVET teacher education and professional development

Good quality teaching is considered to contribute to student learning (Wang et al., 2010), and teacher education plays a major role in improving teaching quality (Delandshere & Petrosky, 2004, cited in Wang et al., 2010). In addition, professional development enhances the quality of teaching as it improves the academic standing of teachers (knowledge) and classroom practices (Villegas-Reimers, 2003). Considering that pre-service TVET teacher education and TVET teachers’ professional development play a critical role in high-quality TVET outcomes, Chapter 5 of this thesis explores two research questions: a) *To what extent are TVET teachers prepared by means of pre-service teacher training for competence-based TVET?*, and b) *What professional development activities do TVET teachers undertake to improve their knowledge and practice for implementing competence-based TVET?*

These research questions are dealt with in Chapter 5 of this thesis. The study results show that although the TVET curriculum is competence-based, TVET teacher training programs are not. This suggests that the TVET and TVET teacher training program curriculums lack coherence in terms of curriculum design and practices. The TVET teacher training program curriculum is not based on a careful analysis of what professional competencies teachers require to teach in TVET and the knowledge and skills gap of incumbent teacher trainees. As the results show, most of the instructional practices in TVET teacher education such as assessment, integration of knowledge, skills and attitudes, self-reflection, and students’ independent learning, which

are critical in competence-based TVET, are not well fostered in practice. The lack of an industrial practice program (industrial internship) for a sustained period of time has reduced the opportunity for teacher training students to practice what they have learned in the teacher training colleges in authentic workplace settings. Since the teacher training curriculum delivery requires students to take many courses parallel to each other, assessment based on demonstrated capabilities in successive tasks (modular-based assessment) has not been implemented, although this is a required practice in TVET colleges. Thus, TVET teacher training colleges follow traditional assessment mechanisms where the assessments are mostly done periodically. In addition, the focus is not on assessing individual competence; rather it is on norm-referenced assessment, as in traditional teaching approaches. Competence-based TVET emphasizes what the students are learning and doing, promoting student-centered learning where students are active learners guided by the teacher (Smith, 1999). However, in TVET teacher training colleges, course delivery appears to be predominantly teacher-centered, as reflected by the ratings of the teacher training students (see Chapter 5).

Given all this, it is difficult to claim that TVET teacher training students are adequately prepared to effectively handle complex teaching duties and roles in competence-based TVET. In this regard, the TVET teacher training curricula should be aligned with the competence-based TVET curriculum, in other words the TVET teacher training curricula should also be competence-based, reflecting the TVET teacher's competence profile in subject matter knowledge and pedagogy. The instructional delivery system should also be learner-centered and practice-oriented in which students engage in practical work to demonstrate what they have learned in practice, both in teacher training college and the school environment.

Although initial teacher education is important for teachers to perform their teaching duties, it is not sufficient for teachers' professional growth (Pantic & Wubbels, 2010; Runhaar, 2009). Teachers are required to engage in professional learning activities that enhance and/or update their knowledge and instructional skills once they have started teaching (Gendole, 2013). Professional development is therefore an essential tool for teachers' growth and the effective handling of new developments in their disciplines and pedagogical practices (Borko, 2004; Desimone, 2009). However, this does not necessarily mean that every professional development program will be effective. For teacher professional development to be fruitful in enhancing student learning by improving teachers' knowledge, skills and motivation, it should be "intensive, sustained, content-focused, coherent, well defined, and strongly implemented"

(Yoon et al., 2008, p.3). Improving the professional learning of teachers is a crucial step in transforming schools and improving academic achievement (Darling-Hammond, 2009).

Although TVET teacher professional development schemes have been implemented in TVET colleges, it appears that TVET teachers question their functioning. As the study shows, teachers believe that teacher professional development enhances their career development and professional growth and improves the quality of teaching practice. However, TVET teachers' practices in relation to teacher professional development were not in line with their belief that teacher professional development supports their careers. As the results indicate, for example, the personal initiative of TVET teachers to undertake TPD activities was not profoundly exercised. Many teachers are engaged in activities such as workshops and training, which usually take place without feedback. Furthermore, there is often a lack of adequate time to test what has been learned (Desimone, 2009; Garet et al., 2001). No systematic professional development plan exists in TVET colleges to provide opportunities for TVET teachers to continuously develop professionally so that they can contribute to high-quality student learning. Even though teaching and research are interwoven (Bronkhorst, 2013), TVET teachers' engagement in research has almost been ignored as a learning and improvement tool.

Overall, TVET teacher education and professional development practice means that it is not possible to say that TVET teachers are well-prepared for effectively handling their teaching responsibilities and playing their new roles as competence-based TVET demands. Interventions to revitalize TVET teacher training programs by aligning them with the competence-based TVET curriculum and competence-based principles is urgently needed. TVET teacher professional development programs that are aligned with competence-based TVET and TVET teachers' needs must be developed to improve the ability of TVET teachers to better realize the TVET objectives. In this regard, much work has to be done to transform the current TVET teacher education and TPD programs into comprehensive competence-based programs. Benchmarking against other countries may also be insightful. A critical appraisal of the current TVET teacher training curriculum needs to be made in the light of the occupational standards and TVET curriculum, to identify the gaps between the curricula. Then, the competencies TVET teachers need to develop according to the TVET teachers qualification profile, both with respect to subject matter knowledge and pedagogical skills, should be identified and validated. This would provide a basis for designing a competence-based TVET curriculum for TVET teacher education.

6.3 Study limitations and suggestions for future research

In this section, the limitations of the study and suggestions for future research are presented. This thesis was conducted in the context of Addis Ababa, the capital city which is a relatively highly developed area in the country. Being a developed area, opportunities for learning at TVET schools and workplaces through field attachments, access to technology and digital media are more favorable than in areas outside Addis Ababa. For example, students in less developed regions do not have opportunities for internships as the areas are not industrially developed; there are therefore no companies in which they can take part in practical learning through cooperative training.

This thesis is based on data collected from polytechnic TVET colleges in Addis Ababa which provide TVET programs at all levels of training (levels I-V). The research was confined to these polytechnic colleges because they have better facilities, more experienced teachers and more professional administration, which places them in a better position to implement competence-based TVET programs. TVET colleges that did not offer level V training were not included in this study. Level I and II training programs were also not included because the trainees' access to the resources of the colleges used in complex training levels is rather limited.

The description given in this thesis of the practice in the polytechnic colleges illustrates the conditions under which TVET has been implemented in Addis Ababa. Nevertheless, a comprehensive study at regional level, incorporating all TVET levels, may be required to capture the full picture of TVET implementation in the greater Addis Ababa region. Although the findings in this thesis might be indicative of the status of TVET implementation in other regions, the results are not sufficient to make generalizations at a national level because the conditions in less developed areas are different from those in Addis Ababa. Future research should address the implementation of competence-based TVET at the country level, incorporating all types of TVET colleges.

Another limitation of this thesis is that the studies were based exclusively on perceptual data, which makes the control of personal and other factors that influence the way respondents see situations problematic. Also, the content of the TVET curriculum and TVET teacher training programs addressed in the studies (Chapters 4 and 5) were not analyzed in the light of competence-based principles to examine the degree to which the curricula reflect workplace standards. This is because, as reported in Chapter 2, the TVET curriculum lacked consistency

in content because of frequent changes made to the content. Thus, the studies were more inclined to the “how” of CBET, although the “what” aspect was partially captured by teachers’ and students’ perceptions of the design aspect of the curriculum. Therefore, there is a need to accompany perception-based data with curriculum content analysis and classroom and school environment observation (for better triangulation) to increase the objectivity of the study.

Two of the three TVET teacher training colleges were included in the study in Chapter 5. One of the teacher training colleges at Adama University has been offering TVET teacher education for more than 20 years, whereas the other teacher training college (Federal TVET Teachers Institute (FTTI)) began offering teacher training very recently. The teacher training students selected from FTTI provided information based on only 18 months (3 semesters) of teaching-learning experience whereas that from Adama students was based on 3 years of experience (6 semesters). The level of FTTI student reflection is therefore limited compared to that of the Adama students, which might reduce the depth of the data (the level of perception of curricular and methodology variables) gathered from the two groups of teacher training students. Further research may address this shortcoming to generate more comparable and balanced data that fully reflect the experiences of respondents.

The challenges observed in implementing a CBET curriculum in accordance with competence-based requirements (Chapter 4) and the lack of planned and needs-based professional development (Chapter 6) are partly attributed to the lack of a competence-oriented TVET management system. Such a TVET management system plays a crucial role in realizing competence-based TVET as successful CBET implementation requires “open culture and cooperation” (Mulder, 2000, cited by Biemans et al., 2004). Developing the leadership competence of TVET management through competence-orientation is vital to “ensure that the institutions which they lead can effectively deliver quality education and training” (ILO, 2012). Future research should also attend to the role TVET management plays in realizing competence-based TVET because programs are run and teachers perform under a certain administrative framework which is highly influenced by the level of competence of the administrators and their ability to deal with external influences. Thus, we propose participatory, transparent, innovative and proactive management with administrative and human relations competences that establishes a competence-oriented working environment and culture through the mobilization and channeling of resources and efforts towards attaining the outcomes. The leadership and administrative competences needed by competence-based

TVET management, which ones are crucial in the case of Ethiopia in leading competence-based TVET to success, and how the competences should be developed need to be identified as “underlying competencies enable successful performance in a given job or role” (Steiner & Hassel, 2011).

A mix of methods (quantitative and qualitative) were employed in the studies in this thesis to answer the research questions. In all the studies, an attempt was made to complement what has been found through questionnaires (quantitative data) with interview responses (qualitative) to obtain a complete picture of the situation involving different respondents.

As part of Chapter 2 concerned the development of TVET, this was a more document-based study complemented with the interview-based responses of a few educational researchers. The part of Chapter 2 on TVET challenges was mainly an interview-based reflection of a few TVET administrators and senior teachers. All in all, the sample size for the interviews was small, mainly because some administrators or coordinators approached declined to take part in the interviews. Others volunteered but could not attend on the required dates. However, although there were few participants, they are believed to provide reliable information on TVET practices and challenges because of their long experience as teachers and coordinators in various TVET curriculum settings and colleges.

For Chapters 3 and 4 and the part of Chapter 5 on professional development, the plan was to involve no less than 200 teachers from the four polytechnic colleges, to obtain a relatively large number of teachers. However, some teachers declined to participate, giving reasons such as *time constraints*, *being fed-up of filling in questionnaires* and *mistrust of the situation*, despite the explanations given of the study and the identity of the researcher. By combining the questionnaires for the three studies, we continued to approach teachers through program coordinators and other teachers working in the colleges and ended up with 126 completed questionnaires.

As shown in Chapter 4 of this thesis, the study signaled a positive correlation between CBET and employed graduates’ job performance as judged (perceived) by graduates and their job supervisors. However, the generalization in this thesis was based mainly on *perceptual data* collected through a questionnaire from a small sample. Because perception is personal in nature (a personal understanding of some phenomena or events), what an individual perceives may not be a complete reflection of the phenomenon or event as it involves selecting some and avoiding other elements. Thus, the perceptual data of respondents as used in this thesis

need to be supported by interviews and on-the-job observation while graduates perform the job, to obtain a better reflection of the situation. The study also failed to clearly determine the extent to which each factor contributed towards job performance. Therefore, future research should find the extent to which CBET could influence (predict) job performance in comparison with other variables through regression analysis using a sufficiently large sample supported by interviews and on-the-job observation.

To measure the effect of predictive variables, some kind of experimental research design (cross-sectional) may also be developed for the future, though it may be difficult to implement. Such a design would make it possible to compare CBET program graduates' job performance (experimental group) with that of non-CBET program graduates (control group).

It should be noted that the conclusions drawn in this thesis should be interpreted in light of the limitations presented above.

6.4 Contributions and recommendations for practice

6.4.1 Theoretical contribution

This study is believed to provide supportive evidence that the realization of CBET is highly dependent on the existence of a strong enabling learning environment which supports students and teachers to actively engage in the learning process aligned with the CBET principles. That is, teachers' and students' actions in developing competence greatly hinges on the extent to which the context in which the actions take place is enabling for the actions sought. Though it may not be a full conclusion, we found evidence of a positive relationship between the level of 'competentiveness' of a program and graduate job performance. A relationship is also observed between TVET teachers' involvement in TVET strategy, curriculum development and implementation and teachers' overall perception of the TVET system in which the teachers work. This finding strengthens the findings of previous research on teacher participation in policy and curriculum matters and the impact of that on program implementation.

It has also been recognized that research on TVET development in Ethiopia is scarce and needs to be strengthened in the future as an input for making informed decisions with regard to planning, monitoring and evaluation of the TVET system (see MOE, 2008; Biazen & Amha, 2009). This thesis could be considered as an addition to the scarce literature on TVET issues in Ethiopia. It could also be considered as an addition to the few studies that have

attempted to establish the relationship between the ‘competentiveness’ of TVET programs and TVET graduates’ labor market performance, though it should be further verified through research using large-scale empirical data.

6.4.2 Practical contribution

This study provides valuable information that can be used to improve the practice of implementing CBET programs. Looking at the level of realization of CBET principles, the study attempted to identify CBET implementation gaps in the TVET programs. In Chapter 4 of this thesis, the CBVE model was used as a framework to investigate the extent to which TVET in Ethiopia is competence-based. Until now, the CBVE model has mainly been used in developed countries such as the Netherlands, Germany and France (Mulder, Weigel & Collins, 2007). This research shows that the CBVE framework could also be applicable in the situation of developing countries such as Ethiopia for research into the field of competence-based education and to measure the extent to which a program is competence-based.

Using the CBVE framework, consensus about the curriculum and its corresponding activities could be reached among implementers to provide direction for developing appropriate competence-enhancing teaching-learning environments. The model is also helpful to monitor the conduct of the training in its various implementation stages, measure both departmental and institutional performance and make constructive interventions to improve the competence development process. Using the CBVE model, teachers could also reflect on their practice to identify gaps, and take it as a practical guide to develop goals, strategies and plans for the future regarding the aspects of CBVE they are to work on and improve for the future, individually and collaboratively.

The study also revealed that teachers’ engagement in policy and curriculum development reform and discourse influences their perception of the TVET system. This has an implication for how teachers discharge their duties and their level of commitment to their work. Accordingly, this thesis acts as a reference for those who see teachers as being crucial in reform implementation, who recognize the importance of teachers’ engagement, and who wish to devise ways by which teacher involvement could be fostered in practice. This thesis is also helpful in providing insights regarding various ways in which teachers could participate in strategy development and curriculum matters before implementation at the national, regional and school level.

As shown in this thesis (see Chapter 5), the TVET teacher training programs do not fully reflect competence-based TVET, either in design or practice, as reflected by the teachers and students of teacher training colleges. This thesis indicates what is lacking in the TVET teacher education programs and makes suggestions to make the programs fit competence-based TVET. We believe this thesis makes a significant practical contribution to the re-design of TVET teacher education programs aligned with a competence-based TVET curriculum by creating an atmosphere conducive to competence-based curriculum development and teaching-learning strategies. The thesis also indicates the gaps observed in teacher professional development activities in TVET colleges. Thus, the recommendations in this thesis can serve as a basis to evaluate current teacher professional development activities in TVET colleges and to design effective TPD programs that contribute towards realizing competence-based TVET collaboratively with teachers.

6.4.3 Recommendations for policy and practice

The results of various chapters of this thesis have several important implications for improving TVET in Ethiopia. As indicated in Chapters 1 and 2 of this thesis, TVET has been considered pivotal in Ethiopia's socio-economic development and poverty reduction. As a result, TVET has obtained a strong foothold in the education system. Nevertheless, as the results of this thesis show, there are challenging issues that need to be addressed to improve the performance of TVET in order to realize its objectives and future sustainability. Measures that are to be taken to address the challenges mainly with respect to implementing competence-based TVET are given in the form of recommendations below.

- Obtaining national consensus based on critical debate among relevant stakeholders, especially on reforms that have a long-lasting impact on national development – such as educational reforms – is fundamental to successful reform implementation. In addition, such experience also saves wastage of available resources, builds citizens' confidence including that of teachers, students and parents, and helps win community cooperation and support, which are essential for successful realization. Educational reforms with a strategic effect such as new educational policies must be presented to *open public debate for national and institutional consensus with all relevant stakeholders and implementers*. This helps produce an educational policy endorsed at societal level which will not be substantially influenced by changes in political ideology.

- Research has confirmed that any educational reform that pushes teachers aside ends in failure. It is important that teachers should be given the opportunity to discuss policy and strategies – whatever time and resources it takes – *before implementation, not only for understanding but also so that they own the policy or strategy and can actively participate in the implementation.* Discussion fora need to be established both at school and department levels in which teachers reflect on policy, school-based initiatives, curricular, pedagogical practices, experience sharing and learning purposes.
- Implementation must be built on a *solid foundation such as material, manpower, mindset and structure* in order to avoid chaotic implementation and resource wastage. When implementing new strategies (reforms), *having a transition period and scaling-up after piloting* must be thought of before implementation. Not only does this give time for building capacity, but it also helps gain experience (a learning ground), identify problems and adapt to changes, including revising and redesigning for better performance in the future and maximizing the use of limited resources.
- Educational innovations adopted from elsewhere *must align with existing and future socio-economic conditions* and their *relevance* must be *critically evaluated and integrated with contextual conditions before implementation.* When introducing innovative educational reforms such as CBET (OBET), *gradual expansion from industrially developed areas to the other regions in programs relevant to the regions* should be taken into consideration. Such practice prevents overstretching, haphazard implementation, and resistance from implementers.
- Workplace experience plays a critical role in competence development. In recognition of this, the cooperative training scheme is incorporated in the Ethiopian TVET system. Nevertheless, various challenges were observed in implementing the cooperative training program, mainly due to an over-ambitious implementation mechanism. For example, cooperative training was directly implemented before the industry partners had assumed ownership of the program and before confidence had been built regarding the competence level of the students. Students were sent to companies every week with teachers which created logistical problems and put a burden on industry trainers. *Increasing the length of the apprenticeship period to a month or more until experience is gained (blocked period)* will allow enterprises to see the advantages and build their confidence; TVET institutions and staff *will have ample time* to build logistics and monitoring capacity; it will also *reduce resistance* from industry partners. Such practice will ensure *the trainees have*

sufficient time to develop the basic skills for productive activities and reduce the risk for employers.

- It could also be helpful to establish *productive centers* in polytechnic TVET institutions with the participation of enterprises as *a platform for workplace learning* in which students practice in the training centers. This practice reduces *logistical problems and builds students' basic skills and confidence* before they go to companies for practical learning. These centers are especially important for level I and level II practical learning as these training levels focus on building basic skills.
- TVET trainees join TVET colleges without an adequate level of awareness of vocational choice and career development, mainly because they do not have exposure to this in high school. Incorporating *vocational guidance and career development in the high school curriculum* is fundamental for helping students make informed career choice decisions and for their future career development. In addition, it may be useful to include pre-vocational education that provides basic skills and vocational orientation for students in general secondary education (grades 9–10).
- Many agree on the critical role teachers play in the school and in the education system. The role of teachers as change agents and change subjects places them at the center of educational reforms. In this regard, TVET teacher training and professional development become significant in helping teachers to discharge their responsibilities effectively. As TVET in Ethiopia is competence-based, TVET teacher education curriculums and practices must align with competence-based education and training. A new TVET teacher education program with its own organizational mandate should be developed considering:
 - competence development as the cornerstone of the curriculum; the TVET curriculum content structured with clear integrated knowledge, skills and attitude components;
 - workplace standards in each occupational area to provide opportunities for teacher trainees to become acquainted with new practices in the world of work;
 - the pedagogical competence profiles of TVET teachers;
 - competence-based education principles: curriculum design and practical dimensions;
 - the modular or course-based structure in which the competencies to be developed, the learning activities to foster the competencies and the assessment mechanisms are clearly spelt out in both cases.

- The TVET teacher training program:
 - Must have an inbuilt INDUSTRIAL PRACTICUM in which teacher training students practice what they have learned in schools in an authentic workplace setting followed by a reflection session. The industrial practicum must be for a blocked time where students are regularly supervised by their teachers.
 - Must have an inbuilt SCHOOL PRACTICUM program in which teacher training students go to TVET schools for direct observation, mentorship and actual teaching practice with critical supervision. The practicum is to be arranged preferably every semester with the clear objective that it is to be implemented considering the situations in the teacher training colleges balanced with subject-matter content.
 - Assessment must focus on measuring competent performance (meeting competence standards set) for both subject-matter and pedagogical aspects appropriate to the context rather than only for subject matter content. The focus must be on individual competence assessment wherever possible.
- The professional development activities in use in TVET colleges are more traditional types such as training, seminars and reading. In addition to these, modern TPD approaches such as collaborative learning, group reflection, action research, mentoring, peer teaching and feedback need to be incorporated. Thus, there must be a TPD program as a division or part of human resource development considering the following:
 - The focus of TPD in CB-TVET must be competence development to foster capabilities for the successful achievement of competence-based TVET objectives.
 - It must be based on the consent of the teachers, that is, the teachers agree on the content of the TPD and set objectives together with the school's planners and the skills gap observed in individual teachers, avoiding a 'one-size-fits-all' type of arrangement.
 - It should incorporate a mechanism for assessing the effectiveness of a particular TPD program on teachers by soliciting feedback from teachers, monitoring and assessing teachers practices, etc.
 - Action research (individually or in-group) *must* be an inbuilt component of teachers' development in TVET colleges. Action research can also be used as a component of teachers' evaluation and scholarship award. The TVET administration should create a conducive climate for teachers to engage in action research, test interventions and reflect on the interventions.

- Incorporate forums (meetings) in which TVET teachers and workplace practitioners come together for discussion and/or experience sharing to enhance teachers' practical experience.

References

- Abebe, A. (2010). *Influences of individual and contextual factors on improving the professional development of TVET teachers in Ethiopia*. PhD Dissertation, Technical University of Kaiserslautern, Germany.
- Abudulahi, B., Vogel, J., Wolde, A. & Ahmed, A. (1972). *Educational sector review. A report, made to the Ethiopian Imperial Government by the Task Force of Vocational Technical Education*, Addis Ababa.
- Adams, A. V., Middleton, J. & Ziderman, A. (1992). The World Bank's policy paper on vocational and technical education and training. *Prospects*, 22(2), 127-140.
- Afeti, G. (2006). *Strategy to revitalize technical and vocational education and training (TVET) in Africa, background document for the African Union's TVET Experts' meeting*, 13-14 December 2006, Addis Ababa.
- African Union (AU) (2007). *Strategy to Revitalize Technical and Vocational Education and Training (TVET) in Africa. A Report for the Meeting of the Bureau of the Conference of Ministers of Education of the African Union*, Addis Ababa: au.
- Akhmadeeva, L., Hindy, M. & Sparrey, C.J. (2013). *Overcoming obstacles to implementing an outcome-based education Model: traditional versus transformational OBE*, paper presented in the Canadian Engineering Education Association conference.
- Alemayehu, K. (2010). A comprehensive assessment of the Ethiopian technical-vocational education and training system: Implication for employment and self-employment opportunities with special reference to Addis Ababa city administration. *The Ethiopian Journal of Education*, 30(2), 1-32.
- Amedorme, S. K. & Fiagbe, Y. A. K. (2013). Challenges Facing Technical And Vocational Education In Ghana. *International Journal of Scientific & Technology Research* 2(6), 253-255.
- American Academy of Physician Assistants (2010). Professional Competence, connecting PAs and Transforming care. Available at:
<https://www.aapa.org/WorkArea/DownloadAsset.aspx?id=810>
- Anane, C.A. (2013). Competency based training: Quality delivery for technical and vocational education and training (TVET) institutions. *Educational Research International*, 2(2), 117-127.
- Anderson, K. (2002). Why teachers participate in decision making and the third continuum. *Canadian Journal of Educational Administration & Policy*, 23, 1-4.
- Ansah, S.K. & Ernest, K. (2013). Technical and Vocational Education and Training in Ghana: A tool for skill acquisition and industrial development. *Journal of Education and Practice*, 4(16), 172-180.

- Antoniou, P. & Kyriakos, L. (2012). A Dynamic Integrated Approach to teacher professional development: Impact and sustainability of the effects on improving teacher behaviour and student outcomes. *Teaching and Teacher Education*, 29, 1-12.
- Atay, D. (2008). 'Teacher research for professional development'. *ELT Journal*, 62(2), 139–147.
- Altinyelken, H.K. (2010). Curriculum change in Uganda: Teacher perspective on the new thematic curriculum. *International Journal of Educational Development*, 30, 151-161.
- Aquilante, A. G., De Silva, R. F., De Souza, M. B. B. & Kishi, R. G. B. (2012). Implementation of competency-based curriculum in Medical Education: perspective of different roles. *International Scholarly Research Network., ISRN Education*, 1-7.
- Asgedom, A., Desta, D., Dufera, D. and Leka, W. (2006). *Quality in Education, Teaching, and Learning: Perceptions and Practice*, American Institutes for Research.
- Atchoarena, D. & Delluc, M. (2001). *Revisiting Technical and Vocational Education in Sub-Saharan Africa: An update on trends, innovations and challenges. A Report for the International Institute for Educational Planning for the World Bank*. Washington, D.C.: World Bank.
- Attwell, G. (1997). New roles for vocational education and training teachers and trainers in Europe: a new framework for their education. *Journal of European Industrial Training*, 21(6/7), 256 – 265.
- Ayalew. S. (2000). *Module for educational policy and management of change*. Addis Ababa: Department of Educational Planning and Management, Addis Ababa University.
- Baartman, L. K. J., Prins, F. J., Kirschner, P. A., & Van der Vleuten, C. P. M. (2007). Determining the quality of Competence Assessment Programs: A self-evaluation procedure. *Studies in Educational Evaluation*, 33, 258-281.
- Bahiru, Z. (2002). *History of modern Ethiopia (1855-1991)*. Addis Ababa: Addis Ababa University Press.
- Baraki, A. H. & Kemenade, E. (2013). Effectiveness of Technical and Vocational Education and Training (TVET): Insights from Ethiopia's reform, *The TQM Journal* 25(5), 492-506.
- Barmar, A., Konwar, J. (2011). Competency-based curriculum in higher education: a necessity grounded by globalization. *Revista Romaneasca pentru Educatie Multidimensionala*, 3(6), 7-15.
- Bayar, A. (2013). *Factors affecting teachers' participation in professional development activities in turkey*. PhD dissertation, University of Missouri.

- Beauregard, A. T. & Henry, L.C. (2009). Making the link between work-life balance practices and organizational performance. *Human Resource Management Review*, 19, 9-22.
- Bell, J. S. & Mitchell, R. (2000). Competency-based versus traditional cohort-based technical education: a comparison of students' perceptions. *Journal of Career and Technical education*, 17(1), 1-11.
- Bennett, K. B., Frain, M., Brady, M. P., Rosenberg, H. & Surinak, T. (2009). Differences Between Employees' and Supervisors' Evaluations of Work Performance and Support Needs. *Education and Training in Developmental Disabilities*, 44(4), 471-480.
- Bennett, R.M. (2002). *Teacher participation in curriculum development: a history of a history of the idea and practice, 1890-1940*. PHD Dissertation, Athens: The University of Georgia.
- Ben-Peretz, M. (1980). Teachers' Role in Curriculum Development: An Alternative Approach, *Canadian Journal of Education*, 5(2), 52-62.
- Biemans, H.J.A., Nieuwenhuis, L., Poell, R., Mulder, M. & Wesselink, R. (2004). Competence-based VET in the Netherlands: Background and pitfalls. *Journal of Vocational Education and Training*, 56(4), 523-538.
- Biemans, H.J.A., Wesselink, R., Gulikers, J., Schaafsma, S., Verstegen, J. & Mulder, M. (2009). Towards competence-based VET: Dealing with the pitfalls. *Journal of Vocational Education and Training*. 61(2), 267-286.
- Boice, D. F. & Kleiner, B. H. (2009). Designing effective performance appraisal systems. *Work Study* 46(6), 197-201.
- Borko, H. (2004). Professional development and teacher learning: mapping the terrain. *Educational Researcher*, 33(8), 1-49.
- Botha, R.J. (2002). Outcomes-based education and educational reform in South Africa. *International Journal of Leadership in Education*, 5(4), 361-371.
- Breed, B. (2013). Exploring the Promotion of Self-Direction in Learning through a Metacognitive Approach to Pair Programming, *SA-eDUC JOURNAL* 10(2), 1-19.
- Broad, K. & Evans, M. (2006). A review of literature on professional development content and delivery modes for experienced teachers. Retrieved on November 12, 2014. Available at: <http://www.oise.utoronto.ca>
- Bronkhorst, L. H., Meijer, P. C., Koster, B. & Vermunt, D. J. (2011). Fostering meaning-oriented learning and deliberate practice in teacher education. *Teaching and Teacher Education* 27(7), 1120-1130.

- Bronkhorst, L. (2013). *Research based teacher education: Interaction between research and teaching*, PHD Dissertation. Utrecht: Utrecht University.
- Brown, B. L. (2002). *Improving Teaching Practices through Action Research*, PHD Dissertation. Blacksburg: Virginia Polytechnic Institute and State University.
- Buchberger, F., Campos, B. P, Kallos, D. & Stephenson, J. (2000). Green paper on teacher education in Europe: *High quality teacher education for high quality education and training*. Retrieved November 11, 2014. Available at: http://www.see-educoop.net/education/in/pdf/green_book-oth-enl-t02.pdf
- Byrd, M.W. (2013). Education, Economic Growth, and Social Stability: Why the Three Are Inseparable. In: R. Azizian and A. Lukin (Eds.), *From APEC 2011 to APEC 2012: American and Russian Perspectives on Asia-Pacific Security and Cooperation*, p.102-113.
- Campos, M. R. (2005). Passive bystanders or active Participants; The dilemmas and social responsibilities of teachers, *PERELAC Journal*, 1, 7-24.
- Carl, A. (2005). The “voice of the teacher” in curriculum development: a voice crying in the wilderness? *South African Journal of Education*, 25(4), 223–228.
- Carl, A.E. (2009). *Teachers empowerment through curriculum development, Theory into practice*. Cape Town, Juta and Company Ltd.
- Central Statistics Agency (2011). Ethiopia Demographic and Health Survey, Addis Ababa.
- Chalchisa, D. (2011). *Continuous Teacher Professional Development: The Ethiopian context*, Addis Ababa: Addis Ababa University. Available at: aadcice.hiroshima-u.ac.jp/e/publications/
- Cheetham, G. & Chivers, G. (1996). Towards a holistic model of professional competence. *Journal of European Industrial Training*, 20(5), 20-30.
- Christiaans, D. J. (2006). Empowering teachers to implement life orientation learning area in the senior phases of the general education and training band, MED Thesis, University of Stellenbosch, South Africa.
- Cooke, W.N., & Meyer, D.G. (2003). The effect of workplace climate on employee performance capacities: A knowledge-based perspective. *International Journal for Quality in Health Care*, 15(3),261-266.
- Creemers, B., Antoniou, P. & Kyriakides, L. (2013). *Teacher Professional Development for Improving Quality of Teaching*, New York/London: Springer Science+Business Media.
- Creswell, J. W. (2012). *Educational research: planning, conducting and evaluating quantitative and qualitative research* (4th ed.). Pearson Education: Upper Saddle River.

- Croll, P., Abbott, D., Broadfoot, P., Osborn, M. & Pollard, A. (1994). Teachers and education policy: roles and models. *British Journal of Educational Studies* 42(4), 333-347.
- Dasmani, A. (2011). Challenges facing technical institute graduates in practical skills acquisition in the Upper East Region of Ghana. *Asia-Pacific Journal of Cooperative Education*, 12(2), 67-77.
- Darling-Hammond, L. (2006). Constructing 21-century teacher education. *Journal of Teacher Education*, 57(10), 1-15.
- Darling-Hammond, L., Wei, R. C., Andre, A., Richardson, N. & Orphanos, S. (2009). Professional Learning in the learning profession: A status report on teacher development in the United States and abroad, Oxford, OH: National Staff Development Council.
- Davies, M. H. (2003). Outcome-based education. *Journal of Veterinary Medicine Education*, 30(3), 227-232.
- De Bruijn, E. & Leeman, Y. (2011). Authentic and self-directed learning in vocational education: Challenges to vocational educators. *Teaching and Teacher Education*, 27, 694-702.
- Department of Training and Workforce Development. (2012). *Guidelines for assessing competence in VET* (4th ed.), West Perth: Australia.
- Desautel, D. (2009). Becoming a thinking thinker: metacognition, self-reflection, and classroom practice. *Teachers College Record*, 111(8), 1997–2020.
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: towards better conceptualizations and measures. *Educational Researcher*, 38, 181-199.
- Edukans Foundation. (2012). Technical and vocational education and training mapping in Ethiopia final report, Addis Ababa.
- Ellström, E., Ekholm, B. & Ellström, P. (2008). Two Types of Learning Environment: Enabling and Constraining A Study of Care Work. *Journal of Workplace Learning*, 20(2), 84-97.
- Epstein, M. & Hundert, E. M. (2002). Defining and assessing professional competence. *Journal of American Medical Association (JAMA)*, 287(2), 226-235.
- Federal Democratic Republic of Ethiopia. (2004). Technical and vocational education and training proclamation No. 391, Addis Ababa: Federal Negarit Gazeta.
- Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record*, 103(6), 1013-1055.

- Fraser, C., Kennedy, A., Reid, L. and McKinney, S. (2007). Teachers' continuing professional development (CPD): contested concepts, understandings and models. *Journal of In-Service Education*, 33(2), 153-169.
- Fulantelli, G. & Opera, L. (2011). Preparing the teachers for a competence-based education system: Sharing learning objects in an open perspective to develop European skills and competences. Available at: http://www.adam-europe.eu/prj/5936/prj/Sloop2desc_book.pdf
- Garet, M.S., Porter, A.C., Desmone, L., Birman, B.F. & Yoon, K.S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38, 915-945.
- Gemeda, F.T., Fiorucci, M. & Catarci, M. (2014). Teachers' professional development in schools: rhetoric versus reality. *Professional Development in Education*, 40(1), 71-88.
- Gendole, A.A. (2013). *Collaborative Teacher Professional Development in Ethiopian Higher Education: The case of communicative language teaching*, PHD Dissertation, University of Twente, The Netherlands.
- George, D. & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference*, (4th ed.). Boston: Allyn & Bacon.
- Girma, Z. (1994). *The interface of vocational schools and the community in Ethiopia: A missing perspective on job opportunity*. Paper presented for the Organization for Social Science Research in Eastern and Southern Africa (OSSREA), Addis Ababa.
- Govender, L.V. (2008). *Teachers' Participation in Policy Making: The Case of the South African Schools Act*, PHD Dissertation, Johannesburg: University of the Witwatersrand.
- Gulikers, J.T.M., Bastiaens, T.J. & Kirschner, P.A. (2004). A five-dimensional framework for authentic assessment. *Educational Technology Research and Development*, 52(3), 67 – 86.
- Gulikers, J.T.M., Biemans, H.J.A. & Mulder, M. (2009) Developer, teacher, student and employer evaluations of competence-based assessment quality. *Studies in Educational Evaluation* 35, 110–119.
- Gulikers, J.T.M., Biemans, H.J.A, Wesselink, R. & Van der Wel, M. (2013). Aligning formative and summative assessments: A collaborative action research challenging teacher conceptions. *Studies in Educational Evaluations*, 39, 116-124.
- Guskey, T.R. (2002). Professional Development and Teacher Change. *Teachers and Teaching: Theory and Practice*, 8(3/4), 381-39.

- Guskey, T.R. (2000). *Evaluating professional development*. Thousand Oaks, California: Corwin Press Inc.
- Gylfason, T. (2001). Natural resources, education, and economic development. *European Economic Review*, 45(4-6), 847-859.
- Handler, B. (2010). Teacher as Curriculum Leader: A Consideration of the Appropriateness of that Role Assignment to Classroom-Based Practitioners. *International Journal of Teacher Leadership*, 3(3), 32-42.
- Harden, R.M., Crosby, J., Davis, M. H., Howie, P. W. & Struthers, A. D. (2000). Task-based learning: the answer to integration and problem-based learning in the clinical years. *Medical Education*, 34(5), 391-397.
- Harford, J. & MacRuairc, G. (2008). Engaging student teachers in meaningful reflective practice. *Teaching and Teacher Education*, 24, 1884–1892.
- Harris, J., Mishra, P. & Koehler, M. (2009). Teachers' Technological Pedagogical Content Knowledge and Learning Activity Types: Curriculum-based Technology Integration Reframed. *Journal of Research on Technology in Education*, 41(4), 393–416.
- Herbert, S. & Marcia, R. (2014). Developing a model for continuous professional development by action research. *Professional Development in Education*, 40(2), 243–264.
- Hightower, A.M., Delgado, R.C., Lloyd, S.C., Wittenstein, R, Sellers, K. & Swanson, C.B. (2011). Improving student learning by supporting quality teaching, Key issues, effective strategies. Available at: http://www.edweek.org/media/eperc_qualityteaching_12.11.pdf
- Hine, G.S.C. (2013). The importance of action research in teacher education programs. *Issues in Educational Research*, 23(2), 151-163.
- Hinett, K. (2002). Improving learning through reflection, Part 1 and Part II. York, Higher Education Academy. Available at: <http://www.heacademy.ac.uk/resources/detail/id485>
- Hoogveld, A.W.M. (2003). *The teacher as designer of competency-based education*. PhD Dissertation, Open University of the Netherlands.
- Hoogveld, A.W.M., Paas, F. & Jochems, W. (2005). Training higher education teachers for instructional design of competency-based education: Product-oriented versus process-oriented worked examples. *Teaching and Teacher Education*, 21, 287–297.
- Hopkins, W.G. (2000). Quantitative research design. *Sport Sciences*, 4(1), 1-8.
- Illeris, K. (2009). Learning, work and competence development. In Knud Illeris (Ed.) *International Perspectives on Competence Development*. London: Routledge.

- International Labour Organization (ILO) (2008). Combining your work and family responsibilities. Moscow: ILO. Available at http://www.ilo.org/public/english/region/eurpro/moscow/info/publ/work_and_family.pdf.
- ILO (2012). TVET leadership and management development Program fact sheet, ILO. Available at: http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-dhaka/documents/publication/wcms_226463.pdf
- Indoshi, F.C., Wagah, M.O. & Agak, J.O. (2010). Factors that determine students' and teachers' attitudes towards art and design curriculum. *International Journal of Vocational and Technical Education*, 2(1), 9-17.
- Janson, J.D. (1998). Curriculum reform in South Africa: a critical analysis of outcome-based education. *Cambridge Journal of Education*, 28(3), 321-331.
- Kafyulilo, A.C., Rugambuka, I.B. & Moses, I. (2013). Implementation of Competency Based Teaching in Morogoro Teachers' Training College, Tanzania. *Makerere Journal of Higher Education*, 4(2), 311-326.
- Kahya, E. (2007). The effects of job characteristics and working conditions on job performance. *International Journal of Industrial Ergonomics*, 37, 515-523.
- Kenedy, J. (2006). A study of learning environment in the extended practicum of a pre-service teacher education at Catholic University, PhD dissertation, Australian Catholic University, Australia.
- Khan, A. & Khan, A.N. (2014). Factors affecting teacher development activities: a theoretical perspective. *Asian Journal of Multidisciplinary Studies*, 2(2), 84-90.
- Killen, R. (2007). Teaching strategies of outcome-based education, second edition, Cape Town: Juta and Company.
- Kim, K. & Jogaratnam, G. (2010). Effects of individual and organizational factors on job satisfaction and intent to stay in the hotel and Restaurant Industry. *Journal of Human Resource in Hospitality and Tourism*, 9 (3), 318-339.
- Kim, H.S. (2012). Outcomes-based Curriculum Development and Student Evaluation in Nursing Education. *Journal of Korean Academy of Nursing*, 42(7)917-927.
- Kingombe. C. (2012). *Lessons for developing countries from experience with technical and vocational education and training*. Working paper 11/1017. London: International Growth Center.
- Kiros, F.R. (1990). *Implementing educational policies in Ethiopia*. World Bank discussion papers, Africa Technical Department Series (Studies on Implementation of African Educational Policies), Washington, D.C.: World Bank.

- Kleickmann, T., Richter, D., Kunter, M., Elsner, J., Besser, M., Krauss, S. & Baumert, J. (2013). Teachers' content knowledge and pedagogical content knowledge: The role of structural differences in teacher education. *Journal of Teacher Education*, 64(1), 90–106.
- Klink, M. van der, Boon, J. & Schlusmans, K. (2007). Competences and vocational higher education: Now and in future. *European Journal of Vocational Training*, 1(40), 67-82.
- Koehler, M.J. & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1), 60-70.
- Korthagen, F.A.J. & Kessels, P.A.M. (1999). Linking Theory and Practice: Changing the Pedagogy of Teacher Education, *Educational Researcher*, 28(4), 4-17.
- Kouwenhoven, W. (2003). *Designing for competence in Mozambique: towards a competence-based curriculum for the Faculty of Education of the Eduardo Mondlane University*. PHD Dissertations University of Twente.
- Kouwenhoven, W. (2009). Competence-based Curriculum Development in Higher Education: a Globalised Concept? A. Lazinica and C. Calafate (Eds.), *Technology Education and Development*. Shanghai: InTech.
- Kraker, J., Lansu, A., & Dam-Mieras, M. C. (2007). Competences and competence-based learning for sustainable development. In J. de Kraker, A. Lansu & M.C. van Dam-Mieras (Eds.), *Crossing boundaries. Innovative learning for sustainable development in higher education* (pp.103-114). Frankfurt am Main: Verlag für Akademische Schriften.
- Kwakman, K. (2003). Factors affecting teachers' participation in professional learning activities, *Teaching and Teacher Education* 19 ,149–170.
- Leblebici, D. (2012). Impact of workplace quality on employee's productivity: case study of a bank in turkey. *Journal of Business Economics and Finance*,1(1), 38-49.
- Le Deist, D.F. & Winterton, J. (2005). What Is Competence? *Human Resource Development International*,8(1), 27-46.
- Lee, J. (2009). Partnerships with industry for efficient and effective implementation of TVET. *International Journal of Vocational Education and Training*, 17(2), 39-56.
- Leitch, R. & Day, C. (2000). Action research and reflective practice: towards a holistic view. *Educational Action Research*, 8(1), 179-193.
- Lekka, W. (1996). Policies, practices and problems of vocational/technical education and training in Ethiopia. In: Habtamu, W. (Ed.), *Proceedings of the conference on the situation of children and adolescents in Ethiopia held in Addis Ababa on 9-10 August*. Addis Ababa: Addis Ababa University Printing Press.

- Lekka, W. (2006). Articulating technical and vocational education and training and higher education: The case of Ethiopia, Addis Ababa. Available at: <http://portal.unesco.org/education/en/files/52555/11725003605Leka.pdf/Leka.pdf>
- Liao, H. & Chuang, A. (2004). A Multilevel Investigation of Factors Influencing Employee Service Performance and Customer Outcomes. *Academy of Management Journal*, 47(1), 41–58.
- Lingard, B. (1996). Education policy making in the postmodern state: A critical and post-structural approach. *Australian Educational Research*, 23(1), 65-91.
- Lingard, B. Hayes, D. & Mills, M. (2003). Teachers and productive pedagogies: contextualizing, conceptualizing, utilizing. *Pedagogy, culture and Society*, 11(3), 399-424.
- Loughran, J., Berry, A. & Mulhall, P. (2013). Understanding and developing Science Teachers' Pedagogical Content Knowledge. Rotterdam: Sense Publishers.
- Maclean, R. (2006). Importance of Developing and Implementing an International Master Degree Standard for Teacher and Trainer Education in Technical and Vocational Education and Training. In: F. Bunning & Zhi-Qun Zhao (Eds), *TVET Teacher Education on the Threshold of Internationalisation*. Berlin: UNEVOC.
- Maphalala, M.C. (2006). *Educators' experiences in Implementing the revised national curriculum statement in the GET band*, PhD dissertation, University of Zululand, South Africa.
- McCombs, B. (2006). *Developing Responsible and Autonomous Learners: A Key to Motivating Students*, American Psychological Association. Available at: <https://www.apa.org/education/k12/learners.aspx>
- Medel-Añonuevo, C. Ohsako, T. & Mauch. W. (2001). Revisiting Lifelong Learning for the 21st Century Revisiting Lifelong Learning for the 21st Century, UNESCO Institute for Education. Available at: <http://www.unesco.org/education/uie/pdf/revisitingLLL.pdf>
- Milliman, J.F., Ferguson, J.M., & Czaplewski, A.J. (2008). Breaking the cycle. *Management Magazine* March/April 17(2), 14-17.
- Ministry of Finance and Economic Development (MOFED) (2002). Ethiopia: Sustainable Development and Poverty Reduction Program, Addis Ababa.
- Ministry of Education (MOE) (2008). *Education statistics annual abstract 2001 E. C (2008-2009 G. C)*, Addis Ababa: MOE.
- MOE (2008). *National technical-vocational education & training (TVET) strategy*, Addis Ababa: MOE.

- MOE (2008). *National technical-vocational education & training (TVET) strategy*, Addis Ababa: MOE.
- MOE (2010). *Co-operative and in-company training handbook*, Addis Ababa: MOE.
- MOE (2005). *Modular-based TVET curriculum*, Addis Ababa: MOE.
- MOE (2005). *Education sector development program III (ESDP III - 2005-2010)*, Addis Ababa: MOE.
- MOE (2010). *Education sector development program IV (ESDP IV - 2010/11-2014/15), program action plan*, Addis Ababa: MOE.
- MOE (2010). *National TVET qualification framework (NTFQ)*, Addis Ababa: MOE.
- MOE (1994). *Education and Training Policy*, Addis Ababa: MOE.
- MOE (2012). Educational statistics annual abstract 2004 E.C. (2011/2012 G.C). Addis Ababa: MOE.
- Moore, D.R., Cheng, M. I. & Dainty, A. R. F. (2002). Competence, competency and competencies: performance assessment in organizations, *Work Study*, 51(2), 314-319.
- Morris, G. (2010). *Metacognition – Cultivating Reflection to Help Students Become Self-Directed Learners*, University of Michigan. Available at: <http://www.lsa.umich.edu/UMICH/sweetland/Home/Instructors/Teaching%20Resources/Metacognition.pdf>
- Mulder, M. (2001). Competence development - some background thoughts. *The Journal of Agricultural Education and Extension*, 7(4), 147-158.
- Mulder, M., Weigel, T. & Collins, K. (2007). The concept of competence in the development of vocational education and training in selected EU member states: a critical analysis. *Journal of Vocational Education & Training*, 59(1), 67-88.
- Mulder, M. (2014). Conceptions of professional competence. In S. Billett, C. Harteis & H. Gruber (Eds). *International Handbook on Research into professional and practice-based learning*. Springer.
- Murray, A. (2010). Empowering Teachers through Professional Development, *English Teaching Forum*, 1, 1-11.
- National Planning Commission (2015). *The Second Growth and Transformation Plan (GTP II)*. The Federal Democratic Republic of Ethiopia, Addis Ababa.
- Negash, T. (2006). *Education in Ethiopia: From crisis to the brink of collapse*. Discussion paper, Sweden: Nordiska Afrikainstitutet, Uppsala University.

- Nyerere, J. (2009). *Technical and vocational education and training (TVET) Sector Mapping in Kenya*. Amersfoort: Edukans Foundation.
- Occupational Competency Assessment Certification Center of Addis Ababa (OCACCAA). (2012). Dominant factors affecting candidates for occupational competency assessment in Addis Ababa City Administration. Available at: <http://www.ocacc.gov.et/Assessment%20Report.html>.
- Oloruntegbe, K.O. (2011). Teachers' involvement, commitment and innovativeness in curriculum development and implementation. *Journal of Emerging Trends in Educational Research and Policy Studies*, 2(6), 443-449.
- Organization for Economic Cooperation and Development [OECD] (2009). *Creating Effective Teaching and Learning Environments: First Results from TALIS: The Professional Development of Teachers*. Paris: OECD.
- OECD (2011). *Teachers Matter: Attracting, Developing and Retaining Effective Teachers Pointers for policy development*. Available at: <http://www.oecd.org/edu/school/48627229.pdf>
- Oketch, M.O. (2007). To vocationalise or not to vocationalise? Perspectives on current trends and issues in technical and vocational education and training (TVET) in Africa. *International Journal of Educational Development*, 27, 220–234.
- Ozturk, I. (2001). The role of education in economic development: a theoretical perspective. *Journal of Rural Development and Administration*, 33(1), 39-47.
- Pankhurst, S. (1955). *Ethiopia: a cultural history*. Fletcher and Son, Ltd., Great Britain.
- Pantic, N. & Wubbels, T. (2012). Competence-based teacher education: A change from Didaktik to Curriculum culture? *Journal of Curriculum Studies* 44(1), 61-87.
- Parvin, M.M. & Kabir, M.M.N. (2011). Factors Affecting Employee Job Satisfaction of Pharmaceutical Sector. *Australian Journal of Business and Management Research*, 9, 113-123.
- Sturgis, C. & Patrick, S. (2010). When Success is the only option: Designing competency-based pathways for next generation learning. Available at:
- Philip, L. (2006). Encouraging reflective practice amongst students: a direct assessment approach. *Planet*, 17, 37-39.
- Private TVET Providers Association (PTPA) (2011). *Problems in implementing TVET in private TVET institutions. A Report to the Ministry of Education*, Addis Ababa: PTPA.

- Psacharopoulos, G. (1990). Why educational policies can fail: An overview of selected African experience, *World Bank discussion paper 82*. Washington, D.C.: World Bank.
- Putman, R.T & Borko, H. (2000). What so new views of knowledge and thinking to say about research on teacher learning? *Educational researcher*, 29(1), 4-16.
- Ravotto, P. (2011). Competence-based learning in Europe and the SLOOP2DESC Model. In G. Fulantelli and L. Oprea. (Eds.), *Preparing the teachers for a competence-based education system* Galati: Europlus Publishing, 13-16.
- Reeve, J. & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology*, 98(1), 209.
- Richter, D., Kunter, M., Klusmann, U., Ludtke, O. & Baumert, J. (2011). Professional development across the teaching career: Teachers' uptake of formal and informal learning opportunities, *Teaching and Teacher Education* 27, 116-126.
- Rivkin, S.G., Hanushek, E. A & Kain, J. F. (2005). Teachers, schools and academic achievement, *Econometrica*, 73(2), 417-458.
- Rogan, J.M., & Grayson, D.J. (2003). Towards a theory of curriculum implementation with particular reference to science education in developing countries. *International Journal of Science Education*, 25(10), 1171-1204.
- Runhaar, P. (2009). *Promoting teachers' professional development*. PhD Dissertation, University of Twente, The Netherlands.
- Ryan, T.G. (2013). The scholarship of teaching and learning within action research: Promise and possibilities. *Inquiry in Education*, 4 (2), 1-17.
- Saeed, R., Mussawar, S., Lodhi, R.N., Iqbal, A., Nayab, H. H. & Yaseen, S. (2013). Factors Affecting the Performance of Employees at Work Place in the Banking Sector of Pakistan. *Middle-East Journal of Scientific Research* 17 (9): 1200-1208.
- Schilling, J. & Koetting, J. R. (2010). Underpinnings of competency-based education. *Athletic Training Education Journal*, 5(4), 165-169.
- Scott-Ladd, B., Travaglione, A. and Marshall, V. (2006). Causal inferences between participation in decision making, task attributes, work effort, rewards, job satisfaction and commitment. *Leadership and Organization Development Journal*, 27 (5). pp. 399-414.
- Seezink, A. (2009). *Continuing teacher development for competence-based teaching*. Unpublished Dissertation. Tilburg: Tilburg University.
- Seezink, A. & Poell, R. (2011). The role of schools' perceived human resource policies in teachers' professional development activities: a comparative study of innovations toward competence-based education. *Asia Pacific Education Review* 12, 149-160.

- Seezink, A., Poell, R. F. & Kirschner, P. A. (2009). Teachers' individual action theories about competence-based education: the value of the cognitive apprenticeship model. *Journal of vocational education and training*, 61(2), 204-215.
- Serdenciuc, N.L. (2013). Competency-Based Education – Implications on Teachers' Training. *Procedia - Social and Behavioral Sciences* 76, 754 – 758.
- Shah, I. H., Rahman, F., Ajmal, M. & Hamidullah, H. M. (2011). Situation analysis of technical education and vocational training: A case study from Pakistan. *International Journal of Academic Research*, 3(1), 980-984.
- Sharma, A., & Naisele, E. (2008). *Technical-vocational education and training: 'The master key'. A Review of the Function of TVET Providers for the Ministry of Education of Fiji*. Suva, Fiji: University of the South Pacific.
- Shubilla, L. & Sturgis, C. (2012). *The Learning Edge: Supporting Student Success in a Competency-Based Learning Environment*, A Competency Works Issue Brief. Vienna, VA: International Association for K-12 Online Learning.
- Sluismans, D.M.A., Straetmans, J.J.M. & Van Merriënboer, J.J.G. (2008). Integrating authentic assessment with competence-based learning in vocational education: the Protocol Portfolio Scoring. *Journal of Vocational Education & Training*, 60(2), 159-172.
- Smith, E. (1999). 'Ten years of competency-based training: the experience of accredited training providers in Australia'. *International Journal of Training and Development*, 3(2),106–17.
- Smith, E. (2010). A review of twenty years of competency-based training in the Australian vocational education and training system. *International Journal of Training and Development*, 14(1), 54-64.
- Somers, J. & Sikorova, E. (2002). The effectiveness of one in-service education of teachers course for influencing teachers' practice. *Journal of In-Service Education*, 28(1), 95-114.
- Somech, A. (2010). Participative decision making in schools: a mediating-moderating analytical framework for understanding school and teacher outcomes. *Educational Administration Quarterly* 46(2) 174–209.
- Stefanou, C.R., Perencevich, K.C., Dicinito, M & Turner, J.C. (2004). Supporting autonomy in the classroom: ways teachers encourage student decision making and ownership. *Educational Psychologist*, 39(2), 97-110.
- Steiner, L. & Hassel, E. A. (2011). *Using competencies to improve school turnaround principal success*. Charlottesville: University of Virginia's Darden/Curry Partnership for Leaders in Education. Available at: www.DardenCurry.org

- Struyven, K. & De Meyst, M. (2010). Competence-based teacher education: illusion or reality? An assessment of the implementation status in Flanders from teachers' and students' point of view. *Teaching and Teacher Education*, 26, 1495-1510.
- Sturing, L., Biemans, H., Mulder, M. & De Bruijn, E. (2011). The nature of study programmes in vocational education: evaluation of the model for comprehensive competence-based vocational education in the Netherlands. *Vocations and Learning*, 4(3), 191-210.
- Swanepoel, C. (2008). The perception of teachers and school principals of each other's disposition towards teacher involvement in school reform. *South African Journal of Education*, 28, 39-51.
- Tefera, S. (1996). Attempts at educational reform in Ethiopia: A top-down or a bottom-up reform. *The Ethiopian Journal of Education*, 16 (1), 1-37.
- Thao, L.T.T. & Hwang, C.J. (2013). Factors affecting employee performance: evidence from Petrovietnam engineering consultancy J.S.C. Available at: <http://ir.meiho.edu.tw/bitstream/987654321/2774/2/FACTORS+AFFECTING+EMPLOYEE+PERFORMANCE.pdf>.
- Thanasoulas, D. (2000). Learner autonomy. *ELT Newsletter. Article*, 32.
- Tillema, H. H., Kessels, J. W. M. & Meijers, F. (2000). Competencies as a building blocks for integrating assessment with instruction in vocational education: a case in the Netherlands. *Assessment and Evaluation in Higher Education*, 25(3), 265-278.
- Tubsree, C. & Bunsong, S. (2013). *Curriculum Development of Vocational Teacher Education within the Context of ASEAN Integration Process, Practice and Working Paper 2*, Regional Cooperation Platform.
- Turnbull, B. (2002). Teacher participation and buy-in: Implications for school reform initiatives. *Learning Environments Research*, 5(3), 235-252.
- Tutu, A. & Constantin, T. (2012). Understanding job performance through persistence and job competency. *Procedia - Social and Behavioural Sciences* 33, 612 – 616.
- UNDP (2015). Human Development Report 2015. Briefing note for countries on the 2015 Human Development Report Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ETH.pdf
- UNESCO & ILO. (2002). Technical- Vocational Education and Training for the Twenty-First Century — UNESCO/ILO Recommendations. Available at: https://www.google.nl/?gws_rd=cr&ei=GYaPUszmOcmr4ASJIIDADQ#q=UNESCO+%26+ILO

- UNESCO (2006). Participation in Formal Technical and Vocational Education and Training Programs Worldwide: An Initial Statistical Study. Available at: <https://www.unesco.org/images/0014/001496/149652e.pdf>
- Usman, A.A., & Pascal, G. (2009). The role of technical and vocational education and training (TVET) in human resources development: The case of Tumba College of Technology (TCT)-Rwanda. Available at: <http://www.tct.ac.rw/images/Ayuba.pdf>
- Van der Horst, H. & McDonald, R. (1997). *OBE, Outcome-based education. A teacher's manual*. Pretoria: Kagiso.
- Villegas-Reimers, E. (2003). Teacher professional development: an international review of the literature. Paris: UNESCO: International Institute for Educational Planning. Available at: <http://www.iiep.unesco.org>. Accessed on: 9-8-2014.
- Vleuten, C.P.M. & Schuwirth, L.W.T. (2005). Assessing professional competence: from methods to programmes. *Medical Education*, 39,309–317.
- Yoon, K. S., Duncan, T., Lee, S. & Shapley (2008). The effects of teachers' professional development on student achievement: Findings from a systematic review of evidence (Paper presented at the Annual Meeting of the American Educational Research Association, March 24-28, 2008, New York).
- Wagaw, T. (1979). Education in Ethiopia: prospect and retrospect. Ann Arbor: The Michigan University Press.
- Wang, J., Lin, E., Spalding, E., Klecka, C.L. & Odel, S.J. (2010). Quality Teaching and Teacher Education: A Kaleidoscope of Notions. *Journal of Teacher Education*, 62(4), 331-338.
- Wesselink, R. (2010). *Comprehensive competence-based education: The development and use of a curriculum analysis and improvement model*. PhD Dissertation, Wageningen University, The Netherlands.
- Wodajo, M. (1955). Postwar reform in Ethiopian education. *Comparative Education Review*, 2(3), 24-30.
- Wyatt, M. (2011). Teachers researching their own practice. *ELT Journal*, 65(4),417-425.
- Zimmerman, B.J. (2000). Self-Efficacy: An essential motive to learn. *Contemporary Educational Psychology* 25, 82–91.

SUMMARY

It is well recognized that education and training enhances the socio-economic development of nations through the development of competent and productive manpower. In this regard, TVET is considered a vital aspect of the education process in all countries, giving it a high priority in national development agendas (UNESCO, 2004). With this understanding, Ethiopia endorsed TVET as early as the 1940s with the aim to produce skilled manpower to match its socio-economic development.

This thesis has two broad aims. The first aim is to show how TVET has developed in Ethiopia as a component of the Ethiopian education system. We highlight the challenges it has encountered in its different stages of development, including the introduction of competence-based TVET, as a basis to learn from its achievements and pitfalls. The second aim of this thesis is to explore the status of the implementation of competence-based TVET in the light of TVET teacher participation, competence-based principles and TVET teacher education and professional development. The first aim was mainly achieved by analyzing documents such as government policy papers, statistical reports and research-based papers on the educational development of the country, supported by interviews with relevant persons working in various capacities in TVET colleges (Chapter 2). The second aim of the thesis was addressed by performing empirical studies using interviews and a questionnaire survey that explored TVET teachers' participation (Chapter 3), the realization of competence-based TVET (Chapter 4), and the pre-service training of TVET teachers and their professional development (Chapter 5).

Chapter 1 of this thesis addresses the context of the study, the statement of the problem, the research design and research questions and an overview of the thesis. Chapter 2 addresses how TVET in Ethiopia has developed and the challenges it has faced in implementing competence-based TVET, guided by two research questions:

- a) *How has the TVET system developed in Ethiopia and what lessons can be learned as a basis for current practice?*
- b) *What challenges are currently being encountered in implementing competence-based TVET in Ethiopia?*

The results of Chapter 2 revealed that TVET has become a mainstream activity in the Ethiopian education system since the 1940s, as an instrument for socio-economic development and poverty reduction. TVET policies, however, have varied among the

different governments of Ethiopia because of differences in their education policies, reflecting ideological differences. As a result, educational reform in Ethiopia, including TVET, has been greatly influenced by the ideology that governments have adopted, which has led to policy inconsistency. The results further showed that the process of developing and executing educational reforms including TVET appears to follow a top-down strategy with authoritative implementation, without the full participation of stakeholders, although the level of participation has to some extent improved with recent TVET developments. It therefore appears that many of the problems and challenges that the Ethiopian education system, including TVET, suffers appear to result from developing and implementing educational reforms without an adequate level of consensus among the stakeholders, especially the implementers. This has led to instability in the Ethiopian TVET system because new policy reforms start from scratch instead of considering the salient aspects of the previous practices. For example, in the 1970s and 1980s, TVET was an educational stream in which academically good students enrolled based on their interests and free will. Currently, TVET streaming is based in full on grade 10 national examination results. Those with lower scores (the majority) in the national examination enter TVET. The interests and aptitude of students, which were given priority in the past, do not have a place in the current TVET system.

In this regard, we propose following a transparent and inclusive national consensus-based educational policy development and implementation system for the smooth implementation of educational reforms. This will enable the effective attainment of educational goals by avoiding wasteful practices. The results further showed that implementing competence-based TVET has faced various implementation challenges, mainly because of a lack of a strong implementation foundation. Among the main challenges were: lack of adequately prepared TVET teachers with the proper attitude, training in too many fields in one institution, inadequate teaching materials and facilities, the unwillingness of companies to provide internship training, frequent curriculum changes and graduates' failure in national occupational assessment. Many of the challenges were the result of the automatic implementation of the competence-based approach in TVET without adequate preparation. The high desire to curb the systemic problems of the TVET system might have prompted the policymakers to implement the competence-based approach rapidly. In this regard, we suggest that adequate preparation should be made to implement new and demanding innovations such as competence-based education, taking adequate time to lay a sound implementation foundation. Also, a pilot program in a relatively developed region might have been valuable

to gain experience and learn more about what competence-based education entails in practice instead of launching the program in all regions at the same time.

Chapter 3 describes the extent to which TVET teachers have participated in competence-based TVET strategy and curriculum development and implementation discourse, problems the teachers faced in implementing competence-based programs, and whether those have a relationship with the teachers' overall perception of the TVET system. Three research questions guided Chapter 3:

- a) *To what extent did TVET teachers participate in the development of competence-based TVET strategy, curriculum development and implementation process/discourse?*
- b) *What problems have teachers encountered in implementing the competence-based approach in TVET colleges?*
- c) *How do teachers perceive the TVET system in relation to their participation and problems they encounter in implementation?*

The results of Chapter 3 revealed that the participation of TVET teachers in strategy and curriculum development before and after the implementation process was not found to be commendable by the majority of TVET teachers. Teacher participation was limited to a few instruction-related activities such as teaching/learning material preparation. It appeared that TVET teachers and TVET colleges began executing the new competence-based TVET system with little understanding of the competence-based approach. Thus, the strategy was enforced without TVET teachers and administrators understanding the new outcome-based education, which requires a structural, attitudinal and work habit transformation. A significant number of TVET teachers were even doubtful of their ability to provide the training up to the standard required, mainly due to inadequate preparation. The results further showed that TVET teachers were working under resource constraints which inhibited them from implementing the competence-based TVET curriculum in a manner that would ensure the quality of the outcome. The results also revealed that teacher participation in strategy and curriculum development and implementation decisions, and the environment under which they conducted the training, affected the teachers' perception of the TVET system, which has implications for the teachers' motivation and commitment to work towards realizing the goals of TVET. The more teachers participated in TVET policy and curriculum development and implementation discourse and practice, the greater their motivation, commitment and

performance. Aligning training programs with resource capability is also crucial in realizing desirable educational outcomes, especially in less developed countries like Ethiopia.

Chapter 4 of this thesis is on the realization of competence-based TVET in Ethiopia. As stated before, TVET in Ethiopia has been implementing competence-based education and training (CBET) since 2008. The realization of competence-based TVET, however, is possible if competence-based TVET is practiced in accordance with the principles of CBET, which guide curriculum development, teaching-learning processes and assessment. Thus, the aim of Chapter 4 was to explore how competence-based TVET has been practiced in the light of CBET principles and to see whether a relationship exists between competence-based training and graduate job performance. Two questions guided this study:

- a) *To what extent are the principles of competence-based education and training implemented in TVET programs in Ethiopia?*
- b) *To what extent does competence-based education and training facilitate the performance of the graduates in employment?*

The results of Chapter 4 revealed that TVET teachers and students have observed the application of CBET principles, although the level of realization of the principles varied across principles. The principles of qualification profile and learning activities were realized more than the other principles, whereas knowledge, skills and attitude (KSA) integration and career and citizenship were the least realized principles. The integrative nature of competence development was not emphasized by the teachers. Assessment in TVET colleges lacked alignment with professional practice and was not emphasized as a critical tool to measure competence development. Thus, it is difficult to say that the assessment practice in TVET colleges measures the development of workplace competencies sufficiently. The results also indicated that students lacked sufficient opportunities to learn from their personal experiences through self-reflection and self-direction, suggesting that students seem to depend on teachers. According to this study, it appears that developing knowledge, skills and attitudes essential for lifelong learning were not given much attention. The result also indicated that a positive relationship exists between graduates' level of competence and graduates' job performance in the workplace. This suggests that a high realization level of competence-based programs could also produce high graduate workplace performance. In all, the effort that has been made so far to realize competence-based TVET is encouraging, given the stringent constraints. However, much has to be done to make the TVET programs more competence-based in

practice by building strong learning environments that promote competence development. Also, continuous evaluation and monitoring of the curriculum and implementation in light of the CBE principles should be conducted periodically using the CVBE model, to ensure the effectiveness of the TVET system. For this, the involvement of teachers, students, administrators, graduates and practitioners in the labor market becomes necessary.

Chapter 5 explores the extent to which initial (pre-service) TVET teacher training was competence-based in the light of competence-based principles and TVET teachers' engagement in professional development activities. Two research questions guided the study:

- a) *To what extent are TVET teachers prepared for competence-based TVET by means of pre-service teacher training?*
- b) *What professional development activities do TVET teachers undertake to improve their knowledge and practice for implementing CB-TVET?*

The results revealed that the TVET teacher training programs could not be considered competence-based. TVET teacher training program design was not based on a careful analysis of what professional vocational competences teachers require in order to teach in competence-based TVET, nor did it take into account the knowledge and skills gap of incumbent TVET teacher trainees, showing incongruence with the design characteristics of competence-based TVET. Also, the opportunities for students to develop their competencies in practice-based learning activities were not to the level required. As the study showed, the teaching-learning process in TVET teacher training programs did not give much attention to the integrative approach of teaching knowledge, skills and attitudes. The practice might be linked to a lack of appropriate or adequate training of teacher trainers on the competence-based approach in general, and pedagogical competencies appropriate to competence-based TVET in particular. Course delivery in TVET teacher training colleges appeared to more inclined towards lecture-dominated traditional teaching approaches and self-directed and self-reflection practices were not given adequate attention. These practices might be linked to the teachers' long experience in using traditional teaching-learning strategies and possibly less exposure to the competence-based teaching-learning process. Moreover, the focus of student assessment was not on assessing individual competence, rather it was more inclined to norm-referenced assessment, as in traditional assessment approaches. Providing feedback and follow-up to students' learning processes as a strategy to assist students to learn at their own pace was not profoundly observed. The findings further indicated that the core teaching competencies such

as problem solving, self-reflection, self-learning and individual demonstration were not developed to the appropriate level. Thus, it is very difficult to say that the TVET teacher training students were adequately trained to effectively handle the complex teaching duties and roles in competence-based TVET. The study further indicated that, although TVET teachers believe that TPD contributes to their career development and improves the quality of education and training, their engagement in self-directed learning initiatives, individual learning projects and action research were minimal. This shows that TVET teachers lack the intrinsic motivation for engaging actively in professional learning activities.

All in all, TVET teacher education programs lack alignment with the principles of competence-based TVET. The training approach is not competence-based, though some elements of CBE are observed. The TVET teacher program appears to be more teacher-centered than student-centered as delivery methods that actively encourage students to learn independently and cooperatively were not significantly utilized. Seen in the light of the complexity of teaching and the extended role of teachers in competence-based TVET, the teachers training students' capability in terms of pedagogical content knowledge appeared not sufficiently developed to effectively handle the complex teaching responsibilities. There is also no systematic professional development plan to provide opportunities for teachers to develop continuously so that they can contribute to high-quality student learning. The professional development TVET teachers are engaged in fall within traditional forms, such as training, workshops and reading. The TVET system is not supported by teacher-based research which would help develop teachers' knowledge, produce innovative teaching-learning strategies and improve practice. TVET teachers' personal initiative, collaborative learning, administrative effort and support for teachers' professional development were minimal. Although effort has been made to improve teacher quality, the practice in TVET teacher education and professional development does not warrant the claim that TVET teachers are well-prepared to effectively handle their teaching responsibilities and play their new roles to the level that competence-based TVET demands. Redesigning the TVET teacher training curriculum and professional development programs in light of the principles of competence-based vocational education (with the CBVE model as a reference) should be urgently addressed by the Ministry of Education and other agencies to improve the realization of the goals of competence-based TVET.

Chapter 6 summarizes the combined results of the studies and also reflects on the aims of this thesis. The results suggest that, although successive governments of Ethiopia have considered

TVET pivotal to the country's socio-economic development, the pattern of its development has shown inconsistent policy direction, mainly because of ideological differences pursued by the different governments. As a result, the country lacked a dynamic, consensus-based national TVET system which it could consistently follow that would transcend ideological differences and avoid starting building a new system again from scratch. The results also suggest that the TVET system in Ethiopia should involve TVET teachers and administrators in policy and curriculum development related matters. Such involvement is critical, especially when introducing new educational innovations such as the competence-based system, which requires teachers' behavioral and practical transformation in many aspects. The results also suggest that, although the TVET system in Ethiopia has been reorganized in the light of the competence-based (outcome-based) paradigm and observed in practice, its realization has not yet materialized to the required level due to a lack of a strong implementation foundation in terms of administrative infrastructure, teacher preparation, curriculum development skills and support from employing organizations. We propose that a pilot period needs to be established when implementing a new innovation as a basis to gain more understanding and experience on what the innovation entails in practice and to mobilize resources. The results also signal that the 'competentiveness' of a TVET program is positively correlated to employed graduates' job performance in the workplace. We propose that TVET management should work hard to boost the 'competentiveness' of the TVET system in its various dimensions to ensure internal and external efficiencies of the system. Aligning TVET teacher training and teachers' professional development programs with the competence-based vocational training curriculum and principles is highly required, and is a missing element in the Ethiopian TVET teacher training and development schemes. Finally, this thesis suggests research areas in the field of TVET on how the competence-based TVET curriculum has been implemented, involving both regional and national contexts, with the aim to explore how to revitalize the competence-based TVET system including TVET management in light of the principles of competence-based vocational education.

Getachew Habtamu Solomon
Wageningen School of Social Sciences (WASS)
Completed Training and Supervision Plan



Name of the learning activity	Department/Institute	Year	ECTS*
A) Project related competences			
Competence Theory, Research and Practice	ICO/WASS	2014	3
B) General research related competences			
From Topic to Thesis Proposal, YRM 61303	WUR	2010	3
Qualitative Data Analysis: Procedures and Strategies, YRM 60806	WUR	2010	6
Introduction workshop	WASS	2010	
Writing Research Project Proposal	WASS	2010	6
Manuscript and PhD meetings, PHD committee	ECS	2010 - 2011	1
C) Career related competences/personal development			
Effective Behaviour in your professional surroundings	WGS	2010	0.7
Project and Time Management	WGS	2014	1.5
The Essentials of Scientific Writing and Presenting	WGS	2014	1.2
Scientific Writing Skills	WGS	2013	1.8
Techniques for Writing and Presenting a Scientific Paper	WGS	2014	1.2
Information Literacy with Endnotes	WGS	2014	0.6
Supervising M. Sc. Thesis in Ethiopia	Addis Ababa University, Ethiopia	2015/2016	2
Supervising Post Graduate Diploma in Teaching (PGDT) students on Practicum	Addis Ababa University, Ethiopia	2015/2016	1
Supervising PGDT students on Action Research	Addis Ababa University, Ethiopia	2015/2016	1
Total			30.0

*One credit according to ECTS is on average equivalent to 28 hours of study load